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Alterations in the Availability of Positive and Negative Cognitions as a Treatment and Model for Shyness

by

(C) Donna M. Murray

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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Abstract

During pretesting, a shyness survey was administered to 943 male students. Subjects scoring one standard deviation above the mean were defined as high shyness persons, those scoring within two points of the mean were defined as moderately shy persons, and those scoring one standard deviation below the mean were defined as low shyness persons. Forty-five subjects from each of the three shyness groups received either positive, negative, or no treatment for shyness. The positive treatment required subjects to recall positive interpersonal events; the negative treatment required recall of negative interpersonal events. The positive and negative treatments were attempts to manipulate the memorial availability of either positive or negative interpersonal events. Treatment effectiveness was measured in terms of social interactions, assertiveness, job preference, self-ratings, observer ratings, and the relative availability in memory of positive, negative, and neutral interpersonal events. An analysis of subjects' post-treatment thoughts indicates that the positive treatment increased the availability of positive interpersonal events and decreased the availability of negative events. In addition, the interpersonal and assertiveness measures indicate that moderately shy subjects who received the positive treatment behaved more like non-shy subjects than did moderately shy subjects who did not receive a treatment. The positive treatment also reduced self-ratings of shyness. The analysis of subjects' post-treatment thoughts indicates that attempts to increase the availability of negative interpersonal events either had no effect or actually reduced the availability of negative interpersonal events. The negative treatment resulted in increases in self-ratings of shyness; and in some instances, increases in shy interpersonal and assertiveness behavior. However, the main behavioral effect of the negative treatment was to make moderately shy subjects behave more like non-shy subjects. The distinction between feelings of shyness and shy behavior are discussed. In addition some problems with the standard dependent measures for shyness research are explored.

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I. Introduction

Shyness conveys a state, which like happiness, has been difficult for laymen and psychologists alike to define in clear conceptual terms. Researchers have operationally defined shyness and thereby avoided the difficulties of a conceptual definition. Although the development of a coherent conceptual definition of shyness and psychometric measures for validly and reliably identifying shyness should be an important part of this research, these issues are not the principal focii of the current research. Rather the focus of the current research is to develop a treatment for shyness and to examine some of the cognitive components of shyness.

Some researchers have defined shyness operationally as a score on paper and pencil tests such as the Social Anxiety and Distress Test (e.g., Girodo, Dotzenroth, & Stein, 1981; & Cacioppo, Glass, & Merluzzi, 1979), the Survey of Heterosexual Interactions (SHI) (e.g., Mandel & Shrauger, 1980) or the Social Self-Esteem Inventory (e.g., Girodo et al., 1981). These tests assess self-reports of physiological and behavioral responses to social situations, social self-esteem, and desire to be with others. Other researchers have developed their own inventories for measuring shyness (e.g., Cheek & Buss, 1981). Still others have simply advertized for shy individuals or for individuals interested in assertion training (e.g., Hung, Rosenthal, & Kelley, 1980; Jacobs & Cochran, 1982; Safran, Alden, & Davidson, 1980). Zimbardo's (1977) approach is similar to the latter approach in that shyness is determined by asking the subject whether or not s/he is shy. Zimbardo then attempts to determine the characteristics that contribute to the shyness label by asking the subject how s/he would respond in various situations. He finds that the most characteristic component of shy individuals is their extreme negatively focused self-consciousness.

According to Zimbardo (1977) shy individuals and non-shy individuals both experience shyness. However, shy people experience shyness more often, in more types of situations, and with a wider variety of people. This suggests that shyness is better conceptualized along a continuum rather than being characterized in dichotomous terms of shy and not shy.

Zimbardo (1977) also found that 80% of his shy subjects applied the shy label to themselves because of their reluctance to talk. In addition 50% believed that the inability to

make eye contact constitutes an important aspect of shyness while 40% associated shyness with an overly soft voice. Other subjects stated that avoiding people or failing to take the initiative are important components of shyness.

Zimbardo (1977) states that people in the middle ranges of the shyness continuum believe that they lack social skills and/or self-confidence. This finding is partially supported. Glasgow and Arkowitz (1975) found that women who had fewer than six dates in the preceding six months lacked social skills. However, the comparison group of men were characterized by negative self-evaluations rather than a lack of social skills. Unfortunately, the male comparison group was composed of men who had fewer than three dates in the preceding six months. Therefore, the male-female difference may actually reflect differences in degree of shyness. Glass, Merluzzi, Biever, and Larsen (1982) found that both men and women who scored high on an anxiety measure and low on a self-report of social skills measure made more negative self-statements and fewer positive self-statements than did men and women who scored low on anxiety and high on social skills.

A. Population Characteristics of Shyness

Zimbardo (1977) administered his shyness survey to approximately 5000 people. Forty percent of the respondents stated that they currently were shy. However, only 25% of the respondents reported that they had always been shy. An additional 40% of the respondents stated that they were not shy currently but had been shy. Four percent of the respondents said that they were shy all of the time, in all situations, and with virtually all people. Zimbardo (1977) called this last group true-blue shy individuals. Zimbardo (1977) found that the percentage of shy individuals varied depending on the responding population. However, the percentage of currently shy never dropped below 25% and the percentage of true-blue shyness never dropped below 2%. With selected populations the percentage of currently shy individuals reached 60% (e.g., junior-high-school girls) while the percentage of true-blue shy individuals reached 10% (e.g., Japanese). Another estimate of the percentage of shy individuals can be inferred from a study by Arkowitz, Hinton, Perl, and Himadi (1978) in which approximately one third of a large sample of college students reported anxiety regarding dating.

Zimbardo (1977) separated subjects on a shy–not shy basis and found that one index used by subjects in determining whether they were shy was how often they experienced shyness. Approximately one third of the respondents felt shy at least half of the time and in at least half of the current situations in their lives. Importance of the situations in which one is shy was another index. Over 60% reported that they were only occasionally shy, but that the shyness occurred in situations that were important to them.

Zimbardo (1977) states that when the data are collapsed over age, the percentage of shy women is not different from the percentage of shy men. However, during adolescence a larger percentage of girls than boys are shy. The University of California Guidance Study followed 252 children from birth to maturity. They found that girls were more shy than boys. In fact, according to this study, shyness did not exist in boys after age 14 (Macfarland, Allen, & Honzik, 1962). The absence of shyness in post 14 year–old boys is surprising; and is probably accounted for by two factors; the mothers provided the shyness ratings and mothers may believe that it is socially undesirable to have shy adolescent sons.

Having a shy parent may increase the probability of a shy child, especially for first born children. Zimbardo (1977) found that sixty–two percent of shy mothers and 75% of shy fathers had a shy child. However, a child with two shy parents was no more likely to be shy than was a child with only one shy parent. In addition, a shy sibling did not increase the probability of other shy siblings. Unfortunately Zimbardo (1977) does not report the percentage of non–shy mothers and fathers who had shy children although he does report that 40% of the general population is shy. Because shy siblings do not increase the probability of shyness nor does the co–occurance of a shy mother and a shy father increase the probability of a shy child above the probability associated with one shy parent, shyness may be learned rather than inherited.

Preteenage first borns are more shy than preteenage later borns (Macfarland, Allen, & Honzik, 1962; Zimbardo, 1977). Forer (1976) found that teachers rated first borns as less effective in the use of social skills both in the classroom and in play situations. Forer (1976) suggests that later borns are more socially adept because they cannot rely on the power that is available to first borns. Alternatively, Zimbardo (1977) suggests that first borns may be more likely to be shy because parents have higher

aspirations for first borns, and first borns may be aware of discrepancies between their performance and expectations for them. Zimbardo (1977) also suggests that parents assign non-overlapping roles to their children, and the role of shy child may tend to be one of the first roles assigned.

In summary, a large percentage of the population experiences the problem of shyness. Shyness is not a larger problem for women than it is for men, with the exception of the adolescent period. Having a shy parent increases the probability that the child will be shy. However, a genetic basis of shyness is unlikely because children with two shy parents are no more likely to be shy than are children with one shy parent and because children with shy siblings are no more likely to be shy than children with non-shy siblings. Preteenage first borns are more likely to be shy than preteenage later borns. This difference could be due to differences in power available to these children, expectancies for these children, or roles assigned to these children.

B. Clinical Implications of Shyness

Zimbardo (1977) found that shyness interferes with asking for help with a personal problem. In addition, he states that shyness makes it difficult to meet people, reduces the potential of engaging in good experiences, prevents speaking up for rights or expressing opinions and values, encourages excessive self-consciousness, makes it difficult to think clearly and communicate effectively, and limits the potential for positive evaluation. Zimbardo also found that shy students have fewer sexual experiences and enjoy them less than do non-shy students. In short, one may reasonably infer that shy people are both socially and professionally impaired.

According to Zimbardo (1977) shyness, especially extreme shyness, is also conducive to a general fear response and lack of trust in others as well as a specific fear of rejection. The relationship between shyness and generalized fear is supported by Cheek and Buss (1981).

Several investigators believe that there is an association between shyness and depression. For example, Zimbardo (1977) states that depression, anxiety, and loneliness typically accompany shyness. Others (e.g., Martinson & Zerface, 1970; Weiss, 1973) argue that shyness is an important component of depression. These arguments are based

on the fact that depressed people, like shy people, find it difficult to meet and interact with others. In addition, both depression and shyness are characterized by a negative bias in interpretating incoming data (see Girodo et al., 1981 and Zimbardo, 1977 for shyness and see Kuiper, 1978; Rizley, 1978; Seligman, Abramson, Semmel, & von Baeyer, 1979; and Zuroff, 1981 for depression). Also relative to so called non-shy individuals who may in fact have a positive bias both shy individuals and depressed individuals have a negative bias in evaluating themselves (e.g., Clark & Arkowitz, 1975 and Glasgow & Arkowitz, 1975 for shyness; Beck, 1976 for depression) and a memory bias for negative past events (e.g., O'Banion & Arkowitz, in press, and Smith & Sarason, 1975 for shyness; DeMonbreum & Craighead, 1977 for depression). Depressed individuals and shy individuals also share a maladaptive attributional style so that internal and stable attributions tend to be made for failure while success tends to be attributed to external and unstable causes (Girodo et al., 1981). This attributional style is exactly opposite to the style used by non-shy individuals and non-depressed persons (Girodo et al., 1981). Shyness has also been associated with a lack of self-esteem (e.g., Cheek & Buss, 1981; Zimbardo, 1977) as has depression (e.g., Wilson & Krane, 1980).

Despite the above associations between shyness and clinical dysfunctions, not all shy people view shyness as a disadvantage. Twenty percent of Zimbardo's (1977) 5000 respondents stated that they liked being shy. Zimbardo notes that "reserved", "retiring", "unassuming", and "modest" are all favorably valanced descriptors of shy people. He further states that shyness can increase one's personal privacy as well as make the individual appear discreet and seriously introspective. Of course, there are two alternative ways of viewing such positive self-evaluations of shyness. It may be that people are somewhat defensive in their self-reports so that liabilities tend to be presented in the best possible light. On the other hand, for some individuals shyness may truly be perceived as a desirable life style. If this second alternative is correct, then it may be the case that there are two distinct types of shyness.

C. Evidence that Shyness Contains a Cognitive Component

Shy individuals can be discriminated from non-shy individuals on the basis of two attributional biases. The first bias is the previously discussed maladaptive manner of dealing with success and failure. Zimbardo (1977) reports a second attributional bias in the tendency of shy people to interpret shy behavior as evidence for the trait of shyness (i.e., a dispositional attribution); yet when non-shy individuals engage in shy behavior, they tend to interpret the behavior as a reasonable response to the environment (i.e., situational attribution). This attributional difference may result from a difference in focus. Jones and Nisbett (1971) argue that individuals engaged in an interaction with the environment (i.e. actors) tend to assign more responsibility for the interaction to the environment than to themselves while observers of the individual tend to assign more responsibility to the individual than to the environment. Storms (1973) has demonstrated that actors make attributions typical of observers when actors are required to focus on their own behavior. Because shy people are excessively self-focused, their view of their own interactions may be similar to an observer's view. That is, both observers and shy actors may mainly focus on the characteristics of the actor in ascribing causality.

Social interactions also result in shy individuals spontaneously emitting many more negative self-statements than are emitted by non-shy individuals (Cacioppo et al., 1979 and Glass et al., 1982). Shy individuals remember more negative information and interpret negative feedback more harshly than do non-shy individuals (O'Banion & Arkowitz, in press; Smith & Sarason, 1975).

Despite the shy person's acute awareness of symptoms, these symptoms may not be apparent to the observer. Approximately half of Zimbardo's (1977) self-defined shy individuals believed that their acquaintances and friends would not consider them to be shy. There is also considerable disagreement among observers regarding who is and who is not shy. Even individuals (e.g., Melvin Belli, Carol Burnett, Robert Young) who most judges would rate as definitely not shy may rate themselves as shy (Zimbardo, 1977). Bandura (1969) reports that shy individuals have excessively high standards for performance; and even when there are no detectable behavioral differences between shy individuals and non-shy individuals, shy individuals view themselves as less socially competent (Clark & Arkowitz, 1975; Glasgow & Arkowitz, 1975).

Glass, Gottman, and Shmurak (1976) found that subjects who received skill training only for heterosocial anxiety, unlike subjects who received cognitive therapy (i.e., self-statement modification), failed to demonstrate improved performance on novel tasks. In addition, Phillips and Metzger (1973) found that approximately one third of their subjects became even more anxious after successful skill training.

Although Zimbardo's (1977) subjects associated shyness with increased heart and pulse rate, noticeable perspiration, butterflies, and blushing, actual physiological measurement has not supported the hypothesis that shy individuals experience more physiological arousal during social situations than do non-shy individuals (e.g., Brodt & Zimbardo, 1981 for physiological measurements and Mandel & Shrauger, 1980 for self-report and observer ratings). It is possible that both shy individuals and non-shy individuals have similar levels of physiological arousal, but one or both groups misremember the amount of arousal experienced during social settings.

D. Cognitive Approaches to Shyness

There are several cognitive approaches to shyness in terms of both the underlying cause and the correction of the problem. However, there has been very little related empirical work, and the various conceptual approaches are not well developed. In addition, some of the approaches overlap both at the level of analysis and in terms of experimental operations, although these models are presented as independent alternatives. Moreover, although some models deal with both etiological and treatment issues, others focus only on treatment. Also, some approaches appear to differ only because they focus on different aspects of shyness.

Confirmation-Bias Approach

In general, once a belief exists, cognitive searches are biased in favor of hypothesis confirmation. Incoming data that support the belief are accepted while data that do not support the belief are rejected (e.g., Nisbett & Ross, 1980). Zimbardo (1977) suggests that the hypothesis (or self-attribution) that one is shy may be subject to the same testing biases as have been demonstrated for other hypotheses. That is, the individual conducts a biased search of memory, which results in confirmation of the

hypothesis, and rejects (or fails to search for) disconfirming data. Although this approach may adequately explain both the perseveration of shyness and possible augmentation effects, the approach is inadequate for explaining how the hypothesis developed in the first place and why some people become shy while others do not.

Expectations Approach

Zimbardo has also suggested an expectations approach to shyness. This approach can be viewed as an extension of the confirmation-bias approach. The expectation approach asserts that shyness occurs because the individual expects to perform poorly and, therefore, becomes anxious about performing. The negative expectations may be the natural result of negative self-attributions.

The expectations approach is based on Bowers' (1973) position that expectations provide a means of orienting and defining experience. The shy person expects negative social experiences, orients toward negative feedback, and defines his/her experiences in terms of the negative expectancy and feedback.

Several sources of research support the claim that shy individuals expect negative social experiences. Cacioppo, Glass, and Merluzzi (1979) found that when high heterosocially anxious men anticipated a discussion with an unfamiliar woman they spontaneously generated a greater number of negative self-statements and negative self-evaluations than did low heterosocially anxious men. Glasgow and Arkowitz (1975) also found that shy males predominately produce negative self-statements. In addition, even when judges cannot detect differences between heterosocially anxious and non-anxious students, the anxious students expect more negative evaluations than do the non-anxious students (Clark & Arkowitz, 1975; Smith & Sarason, 1975).

There is also some support for the claim that shy individuals are particularly sensitive to negative feedback and define their experiences in terms of negative expectancies and feedback. Smith & Sarason (1975) and O'Banion & Arkowitz (in press) demonstrated that heterosocially anxious students recalled more negative information and interpreted negative feedback less favorably than did heterosocially non-anxious students. In addition, Clark & Arkowitz (1975) and Smith & Sarason (1975) found that heterosocially anxious students tend to underestimate their social performance.

Maladaptive Attributional Style Approach

Another cognitive approach posits that shy individuals, like depressives, are characterized by a maladaptive attributional style so that they attribute social success to task difficulty (i.e., easy task) and failure to lack of ability (Girodo et al., 1981). The style employed by non-shy individuals is to attribute social success to ability and failure to lack of effort. The shy attributional style may thus be responsible for both the emission of negative self-statements and the formation of a negative self-attribution. Conversely, negative labeling and expectancies may produce the negatively biased attributional style.

Misattribution

The misattribution paradigm is an extension of Schachter's work on the plasticity of emotion (e.g., Schachter & Singer, 1962). According to Schachter, all emotions share a common physiological state of arousal. In addition, when an individual experiences an emotion (e.g., fear), s/he first experiences arousal and then uses the environment to determine the emotional label for the arousal. The misattribution paradigm is relevant for any clinical problem that contains an arousal/emotion mediated component. This paradigm attempts to use the individual's dependency on the environment for interpreting arousal and thereby experiencing emotion. This is done by introducing a decoy stimulus into the environment (e.g., white noise), that supposedly causes symptoms associated with arousal. In actuality the decoy stimulus is controlled in such a way that it does not produce arousal. However, the individual is presented with two phenomenologically valid explanations for his/her arousal. That is, from the subject's perspective his/her arousal may be the result of the decoy stimulus or the result of stimuli associated with the dysfunction. Because some of the arousal presumably will be attributed to the fictitious source, the individual will be deceived into experiencing less arousal from the stimulus associated with dysfunction.

Brodt and Zimbardo (1981) told shy and non-shy women that they were participating in an experiment on noise bombardment. Half of the shy individuals and all of the non-shy individuals were told that the noise would cause standard symptoms of arousal -- heart pounding and increased pulse (misattribution conditions). The remaining subjects were told that the noise would cause dry mouths and trembling (shy comparison

group). The shy and non-shy misattribution groups did not differ from each other, and they both performed better than did the shy comparison group. In addition, a manipulation check indicated that approximately 40% of the misattribution subjects believed that they experienced increased pulse and heart rate. More importantly 86% of the shy comparison group reported experiencing dry mouths and tremors. People with dry mouths may prefer to avoid talking; yet all of the main dependent measures involved verbally interacting with a confederate. This suggests that the shy comparison group was biased toward poorer performance. Because the shy misattribution group performed as well as the non-shy misattribution group, it is possible that the misattribution manipulation was a successful treatment for shyness. However, successful treatment can not be demonstrated without an unbiased shy comparison group. An adequate demonstration of successful treatment also requires an unbiased non-shy comparison group, since it is possible that the misattribution manipulation alters the attributions of both non-shy and shy individuals. In the absence of these groups, null results can not be taken as evidence of effective treatment.

There also is evidence that the misattribution approach is an ineffective treatment for speech anxiety (e.g., Singerman, Borkovec, & Baron, 1975) as well as severe insomnia (e.g., Bootzin, Herman, & Nicassio, 1976; Kellogg & Baron, 1975) and severe phobia (e.g. Conger, Conger, & Brehm,; Sushinshy & Bootzin, 1970). In addition, it has been argued by Brehm (1976) that misattribution is generally an inadequate treatment for clinical populations because these populations are highly aware of the various aspects of their problem including the amount of arousal that accompanies the problem. This awareness undermines successful deception regarding the source of arousal.

In addition, manipulations such as fear of shock or noise are necessarily one-trial attempts to cure a problem of clinical proportions. When the client leaves the laboratory, the fear of shock and noise remain behind. If the client is not cured, s/he inevitably will discover the deception. Placebo pills allow for a longer period of deception, but individuals with high perceived arousal probably can not be induced to take "arousal inducing" pills over long periods of time.

Using the misattribution paradigm to treat clinical populations involves ethical as well as practical problems. The therapist must actively lie to the client. In addition, there is

always the possibility of discovery with the inevitable client distress that would follow discovery.

The reattribution paradigm is closely related to the misattribution paradigm in that both paradigms are concerned with providing an alternative explanation for the arousal component of the individual's dysfunction and encouraging the individual to replace the dysfunction related explanation with this new alternative explanation. However, they differ in that use of the misattribution paradigm requires that a stimulus be manufactured and misrepresented as arousal inducing while use of the reattribution paradigm involves examining the individual's current environment for an explanation of the individual's arousal or behavior that is both plausable and unrelated to any dysfunction. The reattribution paradigm assumes that the environment usually contains more than one plausible explanation for behavior and/or arousal, and that some of these explanations are more adaptive than others. Application of the reattribution paradigm consists of highlighting the most adaptive of these explanations. The reattribution approach to clinical dysfunctions avoids the practical and ethical problems of the misattribution paradigm in that the therapist is not required to invent a convincing bogus explanation of arousal. In addition, because the explanation is plausable, it may actually be the cause of the client's arousal and/or behavior. Therefore, the therapist is not placed in a position of directly lying to the client; and there is no deception for the client to uncover. As previously discussed, there is evidence that shy individuals employ different attributional styles than do non-shy individuals (Girodo et al., 1981); and there is evidence that shy individuals and non-shy individuals both experience shyness but shy individuals attribute shy behavior to a personality trait while non-shy individuals attribute shy behavior to the environment (Zimbardo, 1977). Both lines of evidence suggest that non-shy individuals make different attributions regarding their environment than do shy individuals. Because the same environment may support both sets of attributions, reattribution may provide a method of removing attributional differences between shy and non-shy individuals, and thereby, removing shyness. Nevertheless, this paradigm has yet to be applied to the treatment of shyness.

In summary, the misattribution paradigm has been applied to the treatment of shyness; but due to a confound in the one relevant experiment, the results are ambiguous.

In addition, should the misattribution approach prove effective, there are still practical and ethical problems involved in its use. These practical and ethical drawbacks are avoided by the reattribution paradigm.

Social Comparison

Hung, Rosenthal, and Kelley (1980) argue that people assess their performance through social comparison. By lowering the client's benchmark for typically unassertive behavior, they argue that it is possible to give the client a more favorable impression of his/her competence and that this perceived competence will hopefully be expressed through improved performance. Kazdin (1973, 1974) demonstrated that subjects who observe coping models (i.e., models who perform the desired behavior with great difficulty) demonstrate more improvement than do subjects who observe mastery models (i.e., models who perform effortlessly and perfectly). Hung et al. argue that subjects benefit more from coping models because coping models create a more favorable basis for comparison than do mastery models.

Based on this rationale Hung et al. provided shy students with a description of either a mildly shy model, a moderately shy model, severely shy model, or no model. All models were described to the subjects as an average unassertive person. The students who were exposed to the severely shy model subsequently demonstrated the least shyness. The students who were exposed to the moderately shy model were next, while the students who were exposed to the mildly shy model were even more shy than the no-model control.

Hung et al. (1980) argue that the severely and moderately shy models lowered the benchmark for shyness. Therefore, when the subject compared himself with the benchmark, an illusion of competence was created; and this perceived competence was expressed in improved performance. Hung et al. also argue that the mildly shy model raised the benchmark for shyness so that the social comparison was unfavorable for the subject and perceived incompetence was expressed in a performance decrement. The mildly shy model appears to have raised the benchmark, and therefore, decreased assertiveness.

Because Hung et al. (1980) did not measure perceived competence or social comparisons, it is impossible to determine whether these processes mediated the

improved performance. All subjects knew that they had been selected for the experiment because of self-admitted shyness. Subjects who had previously described themselves as shy and who then heard either the severe or the moderate model described as an average unassertive person may have been motivated to perform non-shyly in front of the experimenter in order to avoid any assumed similarity between themselves and the model. This possibility is strengthened by the extremely negative protrayal of both the severely shy and moderately shy models. For example, the severely shy model urinated in his pants when a stranger tried to steal his date; and the moderately shy model was so upset by a stranger trying to steal his date that he was unable to escort the date to her home.

Assuming that social comparison is responsible for improved performance, then to the extent that the therapist lies regarding the behavior of the average shy person, the social comparison approach is subject to some of the same criticisms as the misattribution approach. That is, there is an ethical problem regarding lying and there is a practical problem regarding the client discovering the deception through pondering the information or through further social comparisons in the real world. However, there is some evidence that shyness involves using an inappropriately high standard as the basis for comparison so that in the comparison process shy individuals are disadvantaged relative to non-shy individuals (Bandura, 1969). To the extent that this is the case, the substitution of a realistic standard for the inappropriate one might be advantageous.

Cognitive Availability

Availability refers to the relative ease a person has in recalling some relevant event. "Event" is broadly defined. An event can be the perception of an object or person, an encounter with another person, a conclusion or interpretation from an observation, or a feeling one had in the past. Prior events affect interpretations of current events as well as decisions, plans, and actions. However, which particular prior events will dominate in these processes should be determined by the availability of these prior events. Because availability is malleable, so too decisions, plans, actions, and interpretations placed on new data should be malleable. Higgins, Rholes, and Jones (1977) demonstrated that it is possible to alter the interpretation of new data by altering the cognitive availability of specific adjectives. They exposed subjects to either the words "adventurous",

"self-confident", "independent", and "persistent" or to the words "reckless", "conceited", "aloof", and "stubborn". Then, in a supposedly new experiment, the subjects were told about a man who had many risky hobbies, a high opinion of himself, limited relationships, and who was unlikely to change his mind. The man received a more positive rating from subjects who had previously heard the first set of adjectives than from subjects who had heard the latter set. Hornstein, LaKind, Frankel, and Manne (1975) demonstrated that overt behavior can also be affected by altering the cognitive availability of possible responses. They found that subjects who were exposed to a bogus newsbroadcast regarding a kidney donation pursued a more cooperative strategy in a prisoner's dilemma game than did subjects who were exposed to a newsbroadcast regarding an urban atrocity

It seems likely that nearly all people have both positive and negative experiences. At times people perform well or experience positive interactions while there are other times when performance is poor or interactions are negative . Increasing the relative availability of positive cognitions should reduce the relative availability of negative cognitions thereby affecting mood, estimates of competence, and self-esteem. In other words, the same person might feel optimistic or pessimistic depending on the current cognitive availability of positive and negative events.

More importantly, it seems likely that many experiences are characterized by some degree of ambiguity; and because of the ambiguity, there is usually more than one possible explanation of events. Further, all of the explanations are probably not equally valanced. Increasing the availability of positive cognitions may increase the probability that positive interpretations will be placed on ambiguous data. Similarly increased availability of negative cognitions may increase the probability of negatively interpreting ambiguous data. The clinical literature contains two categories of research that can be reinterpreted in terms of cognitive availability; and this reinterpretation can be viewed as consistent with the notion of altering mood and self-esteem by altering the relative availability of positive and negative information.

The first category for reinterpretation involves the research of Jones, Rhodewalt, Berglass, and Skelton (1981). In three separate experiments these researchers either directly or indirectly induced self-enhancing or self-disparaging behavior. It seems reasonable to view engaging in self-enhancing behavior as a manipulation that increases

the availablity of positive cognitions. Similarly, engaging in self-disparaging behavior can be viewed as a manipulation that increases the availability of negative cognitions. For each experiment, self-enhancing subjects experienced an increase in self-esteem while self-disparaging subjects experienced a decrease.

The second category involves some of the self-persuasion literature. Gergen and Gibbs (1965) had subjects prepare letters stating their qualifications for a job. This manipulation also resulted in increased self-esteem; and in a similar study, Mirels and McPeek (1977) demonstrated that creating self-laudatory essays resulted in more favorable self-ratings than did creating essays on a social issue. Although these tasks are directed toward self-persuasion, it is possible that compiling positive accounts of one's ability increases the availability of positive cognitions about the self.

It is also possible to reinterpret the Velten technique (Velten, 1967) in terms of an availability manipulation. The Velten technique consists of reading either 60 positive, 60 negative, or 60 neutral self-referent statements. In addition, subjects are required to pretend that the statements are true. A self-persuasion effect is supposedly achieved through the uncritical reading of the statements. In other words, the participant supposedly yields to the content of the statements and adopts them as genuinely and specifically characteristic of his/her attitudes and beliefs. However, it is also possible that the uncritical reading of the items, which is an important component of the technique, alters the relative availability of existing positive, negative, and neutral material in the reader's cognitive repertoire. This possibility is strengthened by the probability that, for most people, a memory search will result in support for many of the items. This technique is a well established method of altering mood (e.g., Aderman, 1972; Alloy, Abramson, Viscusi, 1981; Hale & Strickland, 1976; Natale, 1977; Raps, Reinhard, & Seligman, 1980; Strickland, Hale, & Anderson, 1975). The technique has also been used successfully to alter self-esteem. For example, Wilson and Krane (1980) found that students who read the positive self-statements were significantly more elated and possessed higher self-esteem than subjects who read the neutral statements. In addition, subjects who read the negative self-statements were significantly more depressed and had significantly less self-esteem than subjects who read the neutral self-statements.

Also within the self-persuasion framework, Mandel and Shrauger (1980) developed an extension of the Velten technique (Velten, 1967) and applied it to an investigation of shyness. They had shy and non-shy male students read positive self-referent statements and then draw on memory to create their own positive self-referent statements. Other shy and non-shy male students read negative self-referent statements and then created their own negative self-referent statements. The negative self-referent groups reported feeling more uneasiness, anxiety, depression, anger, and fatigue than did the positive self-referent groups. The negative group also reported feeling less happy, calm, cheerful, and self-confident than did the positive groups. In addition, the negative self-referent males had longer latencies to initiate conversation with an attractive woman, spent less time conversing with the woman, engaged in less eye contact, smiling, and facial expressiveness, and spent less time gazing at the woman than did the positive self-referent males. Similarly, shy subjects were less happy, cheerful, calm, and self-confident than were non-shy individuals. Shy individuals also took longer to initiate conversation with the woman, spent less time conversing, and engaged in less eye contact, smiling, and facial expressiveness than did non-shy individuals. Feeling uneasy was the only dependent measure used by Mandel and Shrauger (1980) that provided evidence of an interaction between shyness and the valence of self-statements. Mandel and Shrauger's self-persuasion procedure provides more support for an availability-based reinterpretation of the data than do the standard Velten technique studies because a reinterpretation of studies that used the unmodified technique requires one to infer that subjects retrieved information from the past that was supportive of the self-statements. Mandel and Shrauger's procedure explicitly requires retrieval of a particular type of information from memory, and recent retrieval is a known method of increasing availability (e.g., Higgins et al., 1977).

Mandel and Shraguer's procedure is, in fact, very close to a procedure that would be used if one actually intended to manipulate availability. It seems likely that the most successful availability manipulation would be one that altered the availability of information directly relevant to the problem. The emphasis of the Velten technique (Velten, 1967) is mood. It seems reasonable that the items that most directly impinge on shyness are interpersonal items. Therefore, the relationship between availablity and shyness could

best be explored by manipulating the availability of positive and negative interpersonal events.

However, the main problem for a reinterpretation of Mandel and Shrauger's results is that the study contained neither a no treatment shy group nor a no treatment non-shy group. Without these groups, there is no baseline against which the treatment can be evaluated so that it is impossible to determine whether self-critical statements induced shyness or whether self-enhancing statements alleviated shyness or whether a combination of these effects occurred. Mandel and Shrauger's results only allow one to determine that there is both a difference between shy individuals and non-shy individuals, and another difference between the effect of positive and negative mood oriented self-statements. The fact that, for both shy individuals and non-shy individuals, negative self-statements resulted in poorer performance than positive self-statements does not necessarily mean that shy individuals and non-shy individuals are similarly affected by positive and negative information. This same spread in scores could be obtained if shy individuals are particularly sensitive to one type of self-statement and non-shy individuals are particularly sensitive to the other. This criticism is strengthened by the finding that shy individuals employ a different attributional style for social success and failure than is used by non-shy individuals (Girodo et al., 1981). Therefore, although it provides support for the role of memorial availability in altering cognitions and behavior, Mandel and Shrauger's study provides no direct evidence that shy individuals are made less shy by positive self-statements. It may be that shy individuals respond only to negative self-statements and are unaffected by positive self-statements. Similarly, there is no direct evidence that non-shy individuals are made more shy by negative self-statements. Non-shy individuals may respond exclusively to positive self-statements and be unaffected by negative self-statements. As well, the mood-oriented content of the Velten items (Velten, 1967) seems inappropriate for altering the availability of shyness-relevant memorial content.

In summary, assuming the validity of the above reinterpretations, it appears that there are methods of manipulating the relative availability of various types of cognitions and that these manipulations also are capable of altering the interpretation placed on new data as well as mood, self-esteem, and estimates of competence. Because maladaptive, negative cognitions and low self-esteem are both aspects of shyness, availability

manipulations appear to be an appropriate starting point for establishing an effective treatment for shyness. Shy people may receive a further benefit from increasing the availability of positive cognitions in that as self-esteem increases fear of rejection may decrease. To the extent that fear of rejection inhibits social approach, decreases in this fear should be beneficial. Although it has been demonstrated that positive self-statements have a different effect on both shy individuals and non-shy individuals than negative self-statements, it has not been demonstrated that increasing the availability of negative cognitions can induce shyness or that increasing the availability of positive self-statements can alleviate shyness. It is also unknown whether shy individuals and non-shy individuals are similarly affected by alterations in the availability of various types of cognitions. The present experiment is designed to answer these questions.

In addition to testing a potential treatment for shyness, this experiment will test two possible models of shyness. The first model will be called the interpretation bias model. According to this model individuals have a particular self-image and bias their interpretations of information from their environment so that the information confirms their self-image. In the case of shy individuals the self-image is negative while non-shy individuals have a positive self-image. The second model will be called the availability bias model. According to this model negative information about the self is more available for shy individuals while positive information is more available for non-shy individuals. Therefore, the interpretational differences between shy and non-shy individuals are phenomenologically accurate. However the information on which the interpretations are based is biased because of differences between shy and non-shy individuals in the relative availability of positive and negative information.

The interpretation bias model views shyness as resulting from a negative interpretation bias and views a positive interpretation bias as the normal state. As suggested previously, it is assumed that most information regarding the self is open to more than one interpretation and that all possible interpretations are not equally valanced. Because of the negative interpretation bias, shy people select relatively negatively valenced interpretations. In addition, when the information is unambiguously positive in valence so that no negative interpretation is possible, shy individuals may reject the information because it is inconsistent with the majority of their data. That is, the person

does not deny that the event has occurred, but does deny that the event is attributable to him/herself thereby phenomenologically disassociating him/herself from the experience. The experience is treated as an instance of luck or task ease rather than as an instance of personal success (Heider, 1958; Weiner, Russell, & Lerman, 1978). Information that has an unambiguous negative valence would, of course, be accepted by shy individuals as consistent with extant data. Non-shy individuals because of the positive interpretation bias should choose relatively positive interpretations for ambiguous data, and readily accept positive information about the self while rejecting negative information.

The negative interpretation model is supported by the finding that shy individuals explain failure with internal and stable attributions and explain success with external and unstable attributions (Girodo et al., 1981). In addition, a positive interpretation model for non-shy individuals is supported by evidence that normal individuals view themselves more positively than reality would justify (e.g., Alloy & Abramson, 1979; Kuiper, 1978; Lewinsohn & Mischel, 1980) and by the finding that non-shy persons explain failure with external and unstable attributions and explain success with internal and stable attributions (Girodo et al., 1981).

The interpretation bias model predicts that, relative to non-shy subjects, shy subjects will be unaffected by positive self-statements because the subjects will tend to reject these statements. However, shy subjects will be very responsive to negative self-statements. Non-shy subjects will show the reverse sensitivity so that they will be relatively unresponsive to negative statements and very responsive to positive statements.

Nisbett and Ross (1980) argue that once an individual has developed a theory, which explains some event or set of events, further evaluation of the theory is biased toward theory confirmation. Nisbett and Ross draw on several experiments to support this argument. For example, Lord, Ross, and Lepper (1979) had students read two studies. The results of one study supported the students' own position on capital punishment. The results of the other study supported the opposite position. Students accepted the information that confirmed their own beliefs and rejected information that contradicted these beliefs. Other studies provided either success or failure feedback and found that, despite debriefing, subjects continued to believe that the feedback was accurate (e.g., Lepper, Ross, & Lau, 1979; Ross, Lepper, & Hubbard, 1975).

Nisbett and Ross (1980) suggest that the confirmation bias occurs because of encoding and retrieval biases. For example, people are better at recognizing the relevance of confirming cases than disconfirming cases (Wason & Johnson-Laird, 1965). Nisbett and Ross argue that the tendency to search for confirming information usually will result in discovery of events in memory that confirm the theory. In addition to biasing data retrieval, Nisbett and Ross argue that people bias data generation through behaving in a way that alters reality in the direction of an hypothesis (i.e., self-fulfilling prophecy effect). The interpretation bias can be restated in terms of Nisbett and Ross' (1980) confirmation bias. That is, shy people have a negative self-view (i.e., theory) while non-shy individuals have a positive self-view, and both groups search for confirming information and neglect disconfirming information. In addition, both may behave in a manner conducive to hypothesis confirmation.

According to the availability bias model, shy individuals differ from non-shy individuals in terms of the information available in memory. It is assumed that negative events are relatively more available than positive events for shy individuals but the reverse is true for non-shy individuals. This could be due to different past experiences, but there need not be actual differences in experiences that produce this state of affairs. Many things determine availability such as salience, recency, etc.. The negative bias of shy individuals may be due to one or more converging influences. The bias may reflect a true difference between shy and non-shy persons in the number of positive and negative social experiences. On the other hand, the bias may reflect a tendency for shy individuals to focus more attention on negative events than on positive events so that not only are negative events more likely than positive events to be noticed but, in addition, more details of the negative events are encoded. Shy individuals may also spend relatively more time rehearsing negative events. This would result in more self-generated retrieval cues for negative events, and therefore more opportunities for recall of negative events. The positive bias of non-shy individuals operates in an analogous manner so that non-shy individuals have more retrieval opportunities for positive events.

The negative bias of shy individuals and the positive bias of non-shy individuals in evaluating social success and failure can be explained in terms of the availability bias. A request for an explanation of social success/failure initiates a memory search for the

relevant social situations and an analysis of these situations. For shy individuals, negative social experiences would be more available in memory so that the search would produce considerably more instances of failure than of success. Therefore, the weight of the evidence would suggest that the most appropriate attribution for success would be luck or task ease and the most appropriate attribution for failure would be lack of ability. On the other hand, when non-shy individuals search memory, successes should be relatively more available and so relatively more successes than failures should be retrieved. Therefore, the weight of the evidence would suggest that the most appropriate attribution for success would be ability while the most appropriate attribution for failure would be luck or task difficulty (Heider, 1958).

In summary, according to the availability model, interpretation is not biased. Instead interpretation accurately reflects differences in the relative availability of positive and negative information. Recency is known to be positively correlated with memorial availability and one way to operationalize recency is to have people recall relevant events. Therefore, requesting subjects to recall positive instances of a variety of social situations should result in a recency effect for positive events thereby increasing the relative availability of positive events. Similarly, recalling negative events should create a recency effect for negative events thereby increasing the relative availability of negative events. The availability model predicts a main effect for treatment so that subjects receiving the positive treatment would behave less shyly than subjects receiving no treatment who, in turn, would behave less shyly than subjects receiving the negative treatment. The availability model does not predict a treatment by shyness interaction. For the purposes of the present study, the framework and language of the availability concept have been chosen because of its potential utility both for describing the phenomenon of shyness and for suggesting possible treatments for shyness. Given the current status of the models that have been reviewed here, the availability and social comparison models would seem to provide the more plausable explanations for how shyness originates. The major explanatory power of the other approaches begins once there is an initial hypothesis, explanation, attribution, etc. In addition, the availability approach covers a broader range of potential causes and treatments for shyness than does the social comparison approach. In fact, all of the approaches can be incorporated under the availability approach. For

example, creating a more favorable social comparison, expectation, or attribution can be viewed as manipulations that alter the availability of a particular type of comparison, expectation, or attribution.

II. Method

A. Subjects and Subject Selection for Shyness

One hundred thirty-five male, introductory psychology students participated as subjects in exchange for experimental credit. The study was restricted to male subjects in order to maximize the study's relevance to the existing literature, which has almost exclusively dealt with males and in order to avoid the necessity of dealing with possible sex differences in the absence of theoretical guidance. The three shyness groups were identified through pretesting, which consisted of subjects using a 7-point scale to rate their agreement with the nine self-statements developed by Cheek and Buss (1981) and with an additional self-statement regarding fear of rejection. Subjects were also pretested on half of the items from the Rosenberg Self-Esteem Scale, but these responses were not used in assigning subjects to shyness groups. These pretesting questions appear in Appendix A. Subjects were unaware of the connection between the pretest and the main experiment. Nine hundred and twenty-five male, introductory psychology students were pretested for shyness. The three resulting groups were composed of subjects scoring at least one standard deviation above the mean (i.e., high shyness group), subjects scoring at least one standard deviation below the mean (i.e., low shyness group), and subjects scoring at the mean of the entire sample plus or minus two points (i.e., moderate shyness group). A moderately shy classification for the population mean response is consistent with subjects' self-ratings in that they rate statements such as, "I am socially somewhat awkward" in the range of moderately true on the response scale.

B. Design

A 3 (Shyness) x 3 (Treatments) factorial, between subjects design was used. The decision to use three shyness groups reflects the belief that shyness is a continuum. The three treatment groups were positive self-statements, negative self-statements, and no self-statements. A no self-statement group was used rather than a neutral self-statement group because there is no reason to believe that neutral self-statements represent the natural state for either non-shy individuals or shy individuals. In addition, to

the extent that neutral self-statements might alter the normal state (e.g., via distraction), these statements would become still another treatment. In order to evaluate the effectiveness of the treatments, it was necessary to compare the treatment effects with a no-treatment control rather than with the effects of another treatment.

All subjects were tested in a same-sex social interaction, an opposite-sex social interaction, and a task-oriented interaction with an authority figure. In addition, the subjects were given a chance to choose between either performing additional work or engaging in non-shy behavior. These four different measures of shyness allowed for a broad test of the treatments, and the inclusion of three levels of shyness allowed a determination of whether the effect of the treatments was linear across levels of shyness.

C. Procedure

The main experiment was advertised as a two credit study -- one credit for part one and one credit for part two. Upon arrival at the laboratory, for a supposed group experiment, subjects were told that the experimenter was interested in the correlation between memory for one's own past and other types of memory. The experimenter noted that the other subject was late. The experimenter told subjects in the positive and negative statements groups that the experiment would start without the missing subject and that the missing subject could catch up later. Subjects in the no statements groups were sent to the first waiting room ostensibly to wait for the other subject.

Subjects in the negative self-statements groups read 21 negative self-statements. These were Barnum-type statements. Pretesting had determined that most people had these experiences and associated the experiences with feelings of shyness. For each statement, subjects were asked to try to recall as many experiences of that type as possible. Positive self-statements groups received 21 positive self-statements. The positive self-statements were the affective reverse of the negative self-statements. The self-statement treatment occurred in private cubicles and was administered via a tape recording. Subjects also were given a form that contained a written transcript of the tape recording. The writen transcript included space in which the subject was to record a one or two word reminder for each recalled incident. After each self-statement there was a 1-1/2 minute pause during which the subject was to recall and record relevant incidents

from his past. At the conclusion of the treatment, the tape recording asked the subjects to reread the reminders and then to proceed to the waiting room. Subjects were asked to retain their completed forms. It was intended that the completed form would serve as a reminder of its contents. The negative and positive forms are shown in Appendices B and C respectively.

When the subject arrived at the waiting room, he found either a male or a female confederate already seated in the room. The confederates were blind to subject condition. Upon the subject's arrival, the confederate looked up. After 15 seconds the confederate began one of two alternative conversations. Conversation one consisted of the following three questions. "Are you waiting for RUS 10?" (this was not the subject's experiment), "How many experiments have you participated in so far?", and "What do you think about having to participate in three experiments?". Conversation two consisted of the following questions. "Are you waiting for NECK 7?", (also not the subject's experiment) "Who teaches your section?", "What do you think of this course?". For both conversations there were 45 second pauses between statements. The confederate responded to any questions from the subject but did not extend or initiate any conversation other than the three questions of the assigned conversation. In addition to the three questions, the confederate provided an opportunity for eye contact once every five seconds. That is, the confederate glanced briefly at the subject. Eye contact was only possible during these opportunities.

After two minutes, the confederate said that it was time for him/her to return to the experiment in which s/he was participating. After the confederate left, the experimenter arrived and told the subject that someone needed to use the waiting room to run an experiment and directed the subject to another waiting room. The remaining confederate was already seated in this new waiting room. Upon the subject's arrival, the confederate looked up and, after 15 seconds, began the remaining conversation. Every five seconds, the subject was also given an opportunity for eye contact. After two minutes, the confederate told the subject that it was time for him/her to return to the experiment in which s/he is participating. The order of the confederates as well as the order of the two conversations were counterbalanced across subjects.

The two confederate contacts allowed for an assessment of impairment in a same-sex social interaction and in an opposite-sex social interaction. The primary dependent measures for the social interactions were the amount of time spent conversing, the number of eye contacts, the amount of time spent smiling at the confederate, and the amount of time spent looking at the confederate. Both social interactions were surreptitiously videotaped, and the measures were obtained by scoring the videotapes.

After the second confederate left the waiting room the experimenter arrived and told the subject that continued participation in the experiment required a partner, and that his partner had not shown up. Instead the subject was offered a chance to participate in a behind-the-scenes aspect of experimentation and was told that this would allow him to earn the experimental credit normally given for part two. The subject was then given a choice between filing computer cards for an hour or reading in front of a video camera for 15 minutes. Subjects were told that the videotape would be shown to subjects in another experiment. This choice allowed a comparison between groups when there was an explicit cost (i.e., extra work) to shy behavior. After the subject made his selection, the experimenter said, "Since you haven't completed this experiment, you won't be able to use it for the experimental exam. You do have another experiment that you can use for the exam, don't you"? All introductory psychology students are required to earn three experimental credits through participating in psychology experiments and to take an exam on the experiment of their choice. Because this was a two credit experiment, and all subjects had received one credit for the pretesting, which also could not be used for the experimental exam, this questioning led to the discovery that the subject did not have an experiment that could be used for the experimental exam. The experimenter then said, "I can't put you in a position where you won't be able to write the exam". After apparently considering the situation for a few seconds, the experimenter said, "There's an experimenter who is running subjects a few doors down from here. I'll talk to that experimenter and get him/her to fit you in now. It is a one credit experiment; but as you know, it is the Department's policy that you are entitled to one credit if you show up for an experiment and we can't run you. So you will still end up with two credits and you will have an experiment for the exam". The above policy is explained to students at the start of each term. The subject was then told, "You go to Room C and get your credit for

showing up, and I'll go talk to the other experimenter". The subject was then given the room number and name of the new experiment. He was told that he should go to the new experiment as soon as he received his one credit from the administrator.

When the subject requested his credit, the administrator said, "I'm sorry, but we do not give credit for incomplete experiments". Each succeeding request/demand for credit was followed by the same refusal from the administrator. After two minutes or if the subject acquiesced, the administrator said, "Oh, I guess it wouldn't hurt to give you the credit". The dependent measures from this interaction were the amount of time spent arguing with the administrator and the number of arguments presented. Repetitions of the same argument were treated as independent data points. This interaction was intended to represent an approximation of professional situations in which people must demand recognition for their work.

When the subject arrived at the supposedly new experiment, he was told, "This experiment deals with attitude questionnaires and is similar to the experiment that you had in class". The subject was then asked to list all thoughts he was currently having or had within the last ten minutes. Subjects were next asked to complete the shyness survey, which had been used in the pretesting. Subjects were also asked to complete the Rosenberg Self-Esteem Scale and to rate their affect on six bipolar scales (i.e., happy--unhappy, positive--negative, cheerful--gloomy, good--bad, calm--tense, elated--depressed). See Appendix D for a copy of the Rosenberg Self-Esteem Scale. The subject was then debriefed and sworn to secrecy. Subjects who received the negative statement treatment were requested to participate in a subset of the positive treatment before leaving in order to remove any negative effects from the treatment. Immediately after interacting with each subject each confederate rated the subject's apparent shyness, assertiveness, and friendliness on seven point scales with end points of "extremely true of the subject" and "not at all true of the subject".

In summary, after making either positive, negative or no self-statements, high, moderate and low shyness subjects were tested for shyness in a same-sex social interaction, an opposite-sex social interaction, and a task oriented interaction. It was also determined whether the subject would behave in a non-shy manner when it was advantageous to do so. In addition to measuring shy behavior, subjects were asked to list

their thoughts and to complete a shyness survey including a question regarding fear of rejection, and a self-esteem survey. Finally subjects rated their affect on six dimensions. If shy individuals suffer from an interpretation bias, an interaction between shyness and treatment should result so that shy individuals are susceptible to the negative treatment but not to the positive treatment while non-shy individuals respond to the positive treatment but not to the negative treatment. If shy individuals suffer from an availability bias, a main effect for treatment should result so that individuals receiving the negative treatment behave more shyly than those receiving no treatment, and individuals receiving no treatment behave more shyly than those receiving the positive treatment. However there would be no interaction between treatment and shyness.

III. Results[1]

A. Construct Validity of the Shyness Measure

The validity of using the shyness survey as a measure of shyness is supported by the observer ratings of shyness. A 3 (Shyness) x 3 (Treatment) Analysis of Variance for the sum of the four observers' ratings of shyness revealed a significant main effect for shyness, $F(2, 126) = 3.653$, $p = .029$. As shyness increased so did observer ratings of shyness. See Table 7 for means.

B. Interpersonal Effects: Male Confederate

A 3 (Shyness) x 3 (Treatment) MANOVA was calculated for the dependent measures obtained during the interaction with the male confederate. For the purposes of this MANOVA, time spent looking at the male confederate, time spent smiling at the male confederate, and time spent talking to the male confederate were logarithmically transformed in order to stabilize variance. See Table 1 for a summary of this MANOVA. The MANOVA revealed a significant Shyness x Treatment interaction, $F(16,504) = 1.88$, $p = .020$. Subsequent univariate analyses identified a significant Shyness x Treatment interaction for number of eye contacts, $F(4, 126) = 2.705$, $p = .033$ and a marginal Shyness x Treatment interaction for smiling, $F(4, 126) = 2.369$, $p = .056$. Tables 2 and 3 show the mean scores for these interactions effects. No other effects were significant.

Eye contact

The no treatment, low shyness group neither received a treatment nor had a problem with shyness. Because this group represents the therapeutic goal, the most clinically relevant comparisons are between this group and the debilitated groups. Therefore, the no treatment, low shyness group provides the most appropriate comparison for evaluating both treatment effectiveness and shyness induced debilitation in the absence of treatment.

The no treatment groups displayed an inverted U shaped pattern of eye contact across levels levels of shyness so that the moderately shy group engaged in more eye contact than either the high shyness group, $F(1, 126) = 4.350$, $p = .039$ or the low shyness

group (i.e., non-debilitated group), $F(1, 126) = 4.350$, $p = .039$. The low shyness group and the high shyness group engaged in the same relatively low level of eye contact, $F(1, 126) = 0$. For all three levels of shyness, the positive treatment produced a level of eye contact similar to the no treatment, low shyness group (all $Fs < 1$). High, medium, and low shy subjects who received the negative treatment also did not differ in amount of eye contact from the no treatment, low shyness group, $Fs(1, 126) = 2.088, .297$, and $.411$ respectively; $ps = .151, .587, .523$ respectively. In addition, for moderately shy subjects, both the positive and the negative treatments resulted in significantly less eye contact than did non-treatment, both $Fs(1, 126) = 6.922$, $p = .01$. The negative treatment resulted in more eye contact at the high level of shyness than at the moderate level of shyness, $F(1, 126) = 3.961$, $p = .049$.

Smiling at the male confederate

With respect to the normal smiling behavior of males in the absence of treatment, the no treatment, low shyness group engaged in significantly less smiling than both the moderately shy, no treatment group and the high shyness, no treatment group, $Fs(1, 126) = 9.926$ and 6.353 respectively, $ps = .002$ and $.013$ respectively. These latter two groups did not significantly differ from each other, $F(1, 126) = .397$, $p = .530$. For the positive treatment, high, moderate, and low shyness groups did not significantly differ from the no treatment, low shyness group, $Fs(1, 126) = 1.588, .490$, and $.314$ respectively, $ps = .210, .485$, and $.576$ respectively. The negative treatment high, moderate, and low shyness groups also did not significantly differ from the no treatment, low shyness group, $Fs(1, 126) = 1.103, .397$, and 2.160 respectively; $ps = .296, .530$, and $.144$ respectively. In addition, for the moderately shy subjects, both the positive and the negative treatment resulted in less smiling at the male confederate than did the no treatment, moderately shy control, $Fs(1, 126) = 6.005$ and 6.353 respectively; $ps = .016$ and $.013$ respectively.

C. Interpersonal Effects: Female Confederate

A 3 (Shyness) x 3 (Treatment) MANOVA was also calculated for the dependent measures obtained during subjects' interaction with the female confederate (i.e., time spent talking to the female confederate, time spent looking at the female confederate, time spent smiling at the female confederate, and number of eye contacts with the female confederate). This analysis yielded no significant effects. See Table 4 for a summary of this MANOVA.

D. Intercorrelations Between Measures of Social Interaction with the Male and Female Confederates

With the exceptions of the correlation between smiling at the male confederate and talking to the female confederate and the correlation between smiling at the female confederate and talking to the male confederate, all of the behavioral measures of social interaction were significantly and positively intercorrelated. See Table 5 for these correlations.

E. Interpersonal Effects: Self and Observers Ratings

The individual observer ratings of shyness were combined into a total observed shyness rating. In other words, the male confederate, the female confederate, the administrator, and the second experimenter all rated the subject's shyness; and these ratings were summed to form a total shyness score. Similarly, the individual observer ratings for assertiveness were combined into a total rating for assertiveness; and the individual ratings of friendliness were combined into a total rating for friendliness. The 12 self and observer ratings were entered into a 3 (shyness) x 3 (treatment) MANOVA. The 12 ratings were the subject's score on the shyness survey, the subject's score on the self-esteem survey, the subject's self-rating for fear or rejection, the subject's self-rating for happiness, positiveness, cheerfulness, calmness, mood, overall feeling good vs. bad, and the three total scores for observer ratings of shyness, assertiveness, and friendliness. This MANOVA revealed a main effect for shyness, $F(24,228) = 11.737$, $p < .001$. Subsequent univariate analyses revealed that, except for observer ratings of friendliness, all of the self and observer ratings yielded a significant main effect for

shyness. Table 6 displays summaries of the MANOVA and univariate analyses and Table 7 displays the means for the significant shyness main effects. As shyness increased, self-ratings of shyness, and fear of rejection, and observer ratings of shyness also increased, $Fs(2, 126) = 134.635, 38.366, 3.653$ respectively; $ps < .001, .001$, and $.03$ respectively. Also, as shyness increased, observer ratings of assertiveness decreased, $F(2, 126) = 7.273$, $p = .001$; as did subject ratings of self-esteem, $F(2, 126) = 55.573$, $p < .001$; happiness, $F(2, 126) = 9.264$, $p < .001$; positiveness, $F(2, 126) = 8.858$, $p < .001$; cheerfulness, $F(2, 126) = 9.029$, $p < .001$; calmness, $F(2, 126) = 5.918$, $p = .003$; elation, $F(2, 126) = 6.117$, $p = .003$; and feeling good, $F(2, 126) = 8.479$, $p < .001$.

F. Pre-Post Treatment Differences in Shyness and Self-Esteem

A 3 (Shyness) x 3 (Treatment) ANOVA was calculated on the difference between the pretest score for shyness and the posttest score. There was a significant main effect for shyness, $F(2, 126) = 10.975$, $p < .001$. The high shyness subjects significantly regressed toward the mean, $F(1, 126) = 8.119$, $p = .005$; and the low shyness subjects showed the same tendency $F(1, 126) = 3.378$, $p = .068$. There was also a significant main effect for treatment, $F(2, 126) = 4.972$, $p = .008$. The negative group became more shy between the pre and posttest, while the positive and no treatment groups became less shy. With respect to pre-post difference scores, the negative treatment group significantly differed from both the positive and the no treatment groups, $Fs(1, 126) = 4.093$ and 9.636 respectively; $ps = .045$ and $.002$ respectively. These latter two groups did not significantly differ from each other, $F(1, 126) = 1.169$, $p = .282$. The pre-post-treatment change in shyness ANOVA as well as the means for the shyness main effect and the treatment main effect are displayed in Table 8.

Fifty percent of the self-esteem survey was included in the pretest. The weighting of the pretest score for self-esteem was doubled and a 3 (Shyness) x 3 (Treatment) ANOVA was also calculated for the difference between the pretest self-esteem score and the posttest self-esteem score. There were no significant results from this analysis, all $Fs < 1$.

G. Job Preference

A 3 (Shyness) x 3 (Treatment) ANOVA was calculated to determine whether shyness or treatment affected job preference. There were no significant effects for this ANOVA.

H. Professional Effects

A 3 (Shyness) x 3 (Treatment) MANOVA was calculated for the logarithmically transformed elapsed time arguing for experimental credit, and the logarithmically transformed number of arguments for credit. This MANOVA revealed a significant Shyness x Treatment interaction, $F(8,252) = 2.009$, $p = .046$. Univariate analyses revealed a marginally significant Shyness x Treatment interaction for number of arguments, $F(4,126) = 2.080$, $p = .087$. Table 9 shows the MANOVA and univariate analyses summaries. The significant MANOVA interaction appears primarily to reflect the highly distinctive patterns of treatment effects within the three shyness groupings, and baseline differences in argumentation existing among the three shyness groups in the absence of active treatment. Thus, Table 10 shows that in the absence of treatment, the nondebilitated low shyness subjects tended to present more arguments than both moderately and highly shy subjects, $Fs(1,126) = 6.667$ and 3.267 respectively, $ps = .011$ and .073 respectively. There was no indication that moderately and highly shy subjects differ in argumentation, $F < 1$. Considering only low shyness subjects, the treatment effect suggests a moderate decrease in the number of arguments in the negative self-statement condition compared to no treatment, $F(1,126) = 3.267$, $p = .073$. The comparison between the low shyness group who received the positive treatment and the low shyness untreated group revealed no difference, $F(1,126) < 1$. For moderately shy subjects, the negative treatment resulted in more arguments than did non-treatment, $F(1,126) = 4.267$, $p = .041$, with a similar trend approaching significance for the comparison between the positive and no treatment conditions, $F(1,126) = 3.750$, $p = .055$. More importantly, though, in terms of clinical implications, neither the positive nor negative treatment for moderately shy subjects differed from the low shyness, no treatment group that serves as a standard for effective functioning, $Fs < 1$. Compared to the non-treated low shyness standard group, the negative treatment, high shyness subjects produced somewhat fewer arguments, $F(1,126)$

= 2.817, p = .096, whereas high shyness subjects who received the positive treatment did not differ from the no treatment, low shyness standard group, $F(1, 126) = 1.667$, p = .199.

I. Cognitive Differences

Number of items recalled during treatment

A 3 (Shyness) x 2 (Positive vs. Negative Treatment) ANOVA was calculated for the total number of items recalled during the treatment. There was a significant treatment effect, $F(1, 126) = 24.945$, $p < .001$, indicating that subjects in the positive treatment group remembered more items than did subjects in the negative treatment group. There was also a significant Shyness x Treatment interaction, $F(2, 126) = 6.983$, p = .002. Low shyness subjects who received the positive treatment recalled more items than did high or moderate shyness subjects who received the positive treatment $Fs(1, 126) = 14.295$ and 9.449 respectively, $ps < .001$ and .003 respectively. In addition, low shyness subjects who received the positive treatment recalled considerably more items than did low shyness subjects who received the negative treatment, $F(1, 126) = 35.195$, $p < .001$. Table 11 displays both the means for the treatment effect and the means for the Treatment x Shyness interaction.

Thought listing technique: Total thoughts

After interacting with the male and female confederate and with the administrator, subjects listed their spontaneously occurring thoughts. Subjects then identified these thoughts as positive, negative, or neutral. These data were analyzed by means of a 3 (Shyness) x 3 (Treatment) x 3 (Positive, Negative, or Neutral Thoughts) repeated measures ANOVA where valence of thoughts was the repeated measure. This analysis revealed a main effect for thought valence, $F(2,252) = 9.742$, p = .001. Subjects reported more negative thoughts than either positive or neutral thoughts, $Fs(1,252) = 13.104$ and 16.003 respectively, $ps < .001$. There was no difference in the frequency of positive and neutral thoughts, $F(1,252) = .145$, p = .704.

Thought listing technique: Interpersonal thoughts

Because the treatment specifically involved recall of either positive or negative interpersonal thoughts, two raters who were blind to condition independently classified all interpersonal thoughts. An interpersonal thought was defined as a reference to another person or a reference to the subject's participation in a group activity (e.g., baseball). If a group activity was mentioned, but it was unclear whether the subject was an active participant as opposed to an observer, the thought was not coded as interpersonal. Statements like, "What do they want from me?", "What are they asking for?", "I was set up, given the run around, or shuffled about." were also coded as interpersonal because these statements imply a personal interaction between the subject and some other person. The correlation for interrater reliability was .962, $p < .001$. A 3 (Shyness) x 3 (Treatment) x 3 (Thought Valence) repeated measures ANOVA was calculated for the interpersonal thoughts data. This anlaysis also revealed a main effect for thought valence, $F(2,252) = 4.329$, $p = .014$. However, in the case of interpersonal thoughts there were no differences in the number of positive and negative thoughts recalled, $F(1,252) = .091$, $p = .763$; and there were more positive and negative thoughts recalled than neutral thoughts, $Fs(1,252) = 5.693$ and 7.225 respectively, $ps = .018$ and .008 respectively. Table 12 contains the means for the thought valence main effect.

This analysis also revealed a significant Thought Valence x Treatment interaction, $F(4,252) = 3.579$, $p = .007$. See Table 13 for means. Further analyses revealed that the positive treatment produced more positive thoughts than did either the negative treatment or no treatment, both $Fs(1,252) = 9.634$, $ps = .002$.

In addition this analysis revealed a Shyness x Treatment x Thought Valence interaction, $F(8,252) = 2.447$, $p = .014$. Table 14 shows the means for this interaction. For highly shy subjects the positive treatment resulted in a somewhat greater number of positive thoughts than did the negative treatment or no treatment, both $Fs(1,252) = 3.199$, $p = .075$. In addition, for highly shy subjects the number of positive thoughts following the positive treatment suggests no difference compared to the naturally occurring number of positive thoughts for low shyness, no treatment subjects, $F(1,252) = 1.249$, $p = .265$. For moderately shy subjects, the positive treatment reduced the number of negative thoughts so that for this treatment there were fewer negative than positive thoughts,

$F(1,252) = 4.054$, $p = .045$, and there were somewhat fewer negative thoughts after the positive treatment than after the negative treatment, $F(1,252) = 3.211$, $p = .074$. Moderately shy subjects who received the positive treatment engaged in exactly the same number of positive thoughts as did highly shy subjects who received the positive treatment. However, moderately shy subjects who received either the negative treatment or no treatment engaged in a greater number of positive thoughts than did highly shy subjects who received the negative treatment or no treatment. Therefore, for moderately shy subjects there was no difference in the rate of positive thoughts across treatments.

Moderately shy and low shyness subjects have exactly the same base-rate (i.e., no treatment rate) of positive thoughts. Yet, for low shyness subjects the positive treatment produced more positive thoughts than did either the negative treatment or no treatment, $Fs(1,252) = 11.261$ and 6.051 respectively, $ps < .001$ and .015 respectively; and the negative treatment as compared with the neutral treatment significantly reduced the number of negative thoughts, $F(1,252) = 4.054$, $p = .045$. Also, for low shyness subjects, the negative treatment resulted in fewer negative thoughts than does the positive treatment, $F(1,252) = 3.199$, $p = .075$.

J. Summary of Results

The MANOVA for interactions with the male confederate contained a significant Shyness x Treatment interaction. Further analyses revealed a significant Shyness x Treatment interaction for eye contact with the male confederate as well as a Shyness x Treatment interaction for smiling at the male confederate that just missed conventional levels of significance. With respect to eye contact, in the absence of treatment, moderately shy subjects engaged in more eye contact than did either low shyness subjects or high shyness subjects. In addition, for moderately shy subjects both the positive and negative treatment significantly reduced the amount of eye contacts. However, highly shy subjects who received the negative treatment engaged in significantly more eye contact than did moderately shy subjects who received the negative treatment. With respect to smiling at the male confederate, in the absence of treatment, the low shyness group engaged in significantly less eye contact than did either the moderate or high shyness groups. Once again for moderately shy subjects both the positive and the negative

treatment significantly reduced the amount of smiling at the male confederate. In addition, for all levels of shyness, subjects who received either the positive treatment or the negative treatment did not differ from the low shyness, no treatment comparison group in amount of smiling at the male confederate

The MANOVA for the interactions with the administrator also revealed a significant Shyness x Treatment interaction. Further analyses suggest that this interaction is mainly attributable to a moderate Shyness x Treatment interaction for number of arguments with the administrator. In the absence of treatment, low shyness subjects presented more arguments for credit than did either the moderate shyness subjects or the high shyness subjects. For low shyness subjects, the negative treatment resulted in moderately fewer arguments for credit than did no treatment. For moderately shy subjects both the negative treatment and the positive treatment resulted in an increase in the number of arguments as compared with no treatment. In addition, for moderate shyness subjects neither treatment group differed from the low shyness, no treatment comparison group. For highly shy subjects, the negative treatment resulted in somewhat fewer arguments than did the low shyness, no treatment group.

The MANOVA for self and observer ratings revealed a significant main effect for shyness. Subsequent univariate analyses revealed that, with the exception of observer ratings of friendliness, all of the self and observer ratings contained a significant main effect for shyness. As the level of shyness increased, shyness survey scores, fear of rejection, and observer ratings of shyness also increased while observer ratings of assertiveness as well as subject ratings of self-esteem, happiness, positiveness, cheerfulness, calmness, elation, and feeling good all decreased.

The analysis of the difference between the pre-treatment score for shyness and the post-treatment score revealed a significant main effect for treatment. The negative treatment group became more shy while the positive treatment group and the no treatment group became less shy.

The analysis of items recalled during the treatments revealed a significant treatment effect. More positive past events were recalled than negative past events. The analysis also revealed a significant Shyness x Treatment interaction. During the positive treatment, low shyness subjects recalled more events than did either high or moderate shyness

subjects. Low shyness subjects who received the positive treatment also recalled more events than did low shyness subjects who received the negative treatment.

The analysis of interpersonal thoughts revealed a Thought Valence x Treatment interaction. The positive treatment produced more positive thoughts than did either the negative treatment or no treatment. The analysis also revealed a Shyness x Treatment x Thought Valence interaction. For low shyness subjects, the positive treatment produced more positive thoughts than did either the negative treatment or no treatment. In addition, for the low shyness subjects the negative treatment produced fewer negative thoughts than did either no treatment or the positive treatment. For moderate shyness subjects the positive treatment decreased the number of negative thoughts relative to positive thoughts and resulted in somewhat fewer negative thoughts than did the negative treatment. For highly shy subjects the positive treatment moderately increased the number of positive thoughts as compared to the negative treatment or no treatment. In addition, for highly shy subjects the number of positive thoughts following the positive treatment did not differ from the number of positive thoughts for the no treatment, low shyness subjects.

IV. Discussion

A. Thought Listing

The analysis of subjects' thoughts provides insight into changes in the availability of positive, negative, and neutral events as a result of the treatment. When all thoughts were included in the analysis, there was no effect involving either the shyness variable or the treatment variable. However, when only interpersonal thoughts were included in the analysis, both a Treatment x Thoughts interaction and a Treatment x Shyness x Thought Valence interaction emerged. The results of these two analyses indicate that the availability of memories can be altered and that the alteration is specific to the particular type of memory manipulation (e.g., interpersonal).

For highly shy subjects, the effect of the positive treatment was to increase the number of positive thoughts relative to individuals who received either the negative treatment or no treatment. However, for moderately shy subjects, the positive treatment did not create a further increment in positive thoughts. Instead at the moderate level of shyness, the effect of the positive treatment was to decrease the availability of negative thoughts relative to positive thoughts, and to make negative thoughts less available than was the case for either the negative treatment or no treatment. With respect to non-shy subjects, the effect of the positive treatment was to increase the number of positive thoughts as compared to the number of positive thoughts produced by either the negative treatment or no treatment.

The negative treatment appears to be passively resisted at both the high and moderate levels of shyness. In other words, for these groups neither positive nor negative thoughts appear to be affected by the negative treatment. For non-shy subjects, the negative treatment appears to engage active resistance so that the treatment actually reduces the availability of negative thoughts relative to neutral thoughts and relative to negative thoughts following either the positive treatment or no treatment. It may be that the resistance prevents the negative treatment from creating a negative effect or it may be that the resistance is only temporary so that there is a delayed and possibly reduced negative effect.

In summary, the positive and negative thought listing manipulations affected the availabiltiy of positive and negative interpersonal thoughts, as intended, but not the availability of positive and negative thoughts in general. Across all levels of shyness the positive treatment was effective in either increasing positive thoughts or decreasing negative thoughts, while the negative treatment resulted in what may well be either passive or active resistance to the treatment.

B. Treatment Effectiveness

Eye contact with the male confederate

Ideally an effective treatment of shyness should affect shy individuals so that their behavior begins to approach the behavior of non-treated, non-shy subjects (i.e., the low shyness, no treatment group). Unfortunately, with respect to eye contact, treatment effects were rendered ambiguous by the identical level of eye contact for both the low shyness, non-treatment group and the high shyness, non-treatment group. This means that a decrease in eye contact may indicate either improvement or impairment (i.e., movement in the direction of the low shyness subjects or movement in the direction of the high shyness subjects).

For non-treated subjects (i.e., the control groups), moderately shy subjects displayed significantly more eye contact with the male confederate than did either the low or the high shyness subjects. This difference was eliminated by both the positive and negative treatments. Since there is no reason to suspect that the positive treatment would produce impairment, it may be safe to infer that this treatment removed the difference between moderately shy subjects and the treatment goal. That is, the positive treatment appears to have resulted in a level of eye contact typical of the low shyness, no treatment subjects. With respect to the negative treatment, it seems logical that recalling negative events might increase shyness so that moderately shy subjects may have responded in a manner characteristic of highly shy subjects. However, the analysis of subjects' spontaneous thoughts indicates that low shyness subjects actively resist the negative treatment by engaging in fewer negative thoughts than would be the case if the subject had received either the positive treatment or no treatment. Assuming there is no rebound

effect, this reduction in negative thoughts could be viewed as evidence of improvement. Moderately and highly shy subjects engaged in passive rather than active resistance to the negative treatment. That is, they are unaffected by the treatment as opposed to actively decreasing negative thoughts as a result of the treatment. However, it may be that moderately and highly shy subjects also engage in active resistance to the negative treatment, but the active resistance may have dissipated before subjects' thoughts were recorded. It is, therefore, possible to explain the decreased eye contact in moderately shy subjects following the negative treatment in terms of either increased shyness or decreased shyness.

For high shyness subjects once again both the positive and the negative treatment resulted in a level of eye contact similar to the level of eye contact displayed by subjects who represent the treatment goal (i.e., no treatment, low shyness subjects). However, as previously discussed, the high shyness, no treatment group engaged in exactly the same level of eye contact as did the low shyness, no treatment group so that for high shyness subjects it is impossible so determine whether the treatments had no effect or were completely effective in removing shyness. Nevertheless, there is some evidence of impairment due to the negative treatment because highly shy subjects who received this treatment engaged in significantly more eye contact than did moderately shy subjects who received the negative treatment.

Smiling at the male confederate

As was the case with eye contact, the no treatment, low shyness group (i.e., the group that represents the treatment goal) engaged in significantly less smiling at the male confederate than did the no treatment, moderately shy group. However, unlike eye contact the no treatment, low shyness group also engaged in significantly less smiling at the male confederate than did the no treatment, high shyness group.

At the moderate level of shyness, there is support for the effectiveness of both the positive and the negative treatment. As was suggested with respect to eye contact, the negative treatment may have decreased shyness if subjects actively resisted the treatment. At the high level of shyness, there is minor support for the effectiveness of both treatments in that the high shyness, no treatment group significantly differed from

the low shyness, no treatment group yet neither treatment group significantly differed from the low shyness, no treatment group (i.e., the treatment goal). Unfortunately, the support is qualified by the absence of a significant difference between the high shyness, treatment groups and the high shyness, no treatment group.

Self-Ratings

Although the negative treatment may have had a beneficial effect on behavior, the pre-post change in the shyness survey scores indicates that the negative treatment had a negative effect on self-rated shyness. The positive treatment was not more effective than no treatment. However, the interaction with the administrator could be interpreted as containing success and/or competence feedback because all subjects were given the illusion that they had convinced the administrator to give them credit for the experiment. Although the interaction with the administrator may have been unpleasant, the outcome may have had a therapeutic effect.

Number of arguments for credit

This analysis presents support for both impairment and improvement as a result of the negative treatment. Impairment is demonstrated by fewer arguments for credit from both low shyness subjects and high shyness subjects than from low shyness, no treatment subjects. Improvement is demonstrated by the moderately shy, negative treatment group producing more arguments for credit than the moderately shy, no treatment group. The analysis also includes support for the positive treatment because again the moderately shy group presented more arguments for credit than did the moderately shy, no treatment group.

Summary

This study evaluated the cognitive, behavioral, and affective consequences of two treatments for shyness. At the cognitive level there is evidence that the positive treatment alters the availability of both positive and negative interpersonal events while the negative treatment engages either active or passive resistance to any alteration in the availability of negative interpersonal events. At the behavioral level there is evidence that both

treatments reduce shyness especially moderate levels of shyness. There is also some behavioral evidence, especially with respect to professional impairment, that for low and high shyness subjects the negative treatment increases shy behavior. Finally, at the affective level, there is evidence that feelings of shyness are increased by the negative treatment while feelings of shyness are reduced by either the positive treatment or the control condition. As previously discussed, the beneficial effect of the control condition may be the combined result of having successfully interacted with the administrator and not having experienced the negative treatment. In short, the positive treatment results in cognitive, behavioral, and affective reductions in shyness while the effect of the negative treatment is more complex. When the negative treatment has an effect at the cognitive level, the effect appears to be positive. At the behavioral level, the negative treatment appears to create mainly positive results, but there are also some negative results; and at the affective level, the negative treatment produces a negative effect.

C. Interpretation Bias vs. Availability Bias

It was suggested that shyness may involve either an interpretation bias or an availability bias. According to the interpretation bias shy individuals are particularly responsive to negative information about themselves and resistant to positive information about themselves while non-shy individuals are particularly responsive to positive information and resistant to negative information about themselves. To the extent that people are resistant to a type of information, increasing the memorial availability of the information will be ineffective because the information will be resisted. This does not mean that the individual will deny that the event occurred but rather the event will be interpreted as providing information about the environment rather than information about the individual. According to the availability bias, people are not resistant to a particular type of information; but for shy persons positive information is less available in memory while for non-shy individuals negative information is less available in memory. Increasing the availability of particular types of information will result in the appropriate cognitive, behavioral, and affective changes.

The thought listing data provide some support for the interpretation bias. Non-shy subjects were very responsive to the positive treatment and may have actively resisted the

negative treatment. The thoughts of shy subjects partially support the interpretation bias in that highly shy subjects are less responsive to the positive treatment than are moderately shy or non-shy subjects. However, the thought listing data included two findings that are inconsistent with an interpretation bias in shy subjects. First, shy individuals were resistant to the negative treatment although less so than non-shy individuals; and second, moderately shy individuals were responsive to the positive treatment although less so than non shy persons.

The thought listing data also provide some support for the availability bias in that the Thought Valence x Treatment interaction indicates that all subjects were responsive to the positive treatment. This support is qualified by the Thought Valence x Treatment x Shyness interaction, which indicated that for highly shy subjects the effect of the positive treatment did not quite reach conventional levels of significance.

The availability bias is also supported by the pre-post-treatment change in self-rated shyness. Individuals who received the negative treatment increased their shyness self-ratings and individuals who received the positive treatment decreased their shyness self-ratings.

In general the behavioral data do not support the interpretation bias in that highly shy subjects as well as non-shy subjects are resistant to the negative treatment. In addition, moderately shy subjects actually behaved less shyly following the negative treatment. Also moderately shy subjects were responsive to the positive treatment. With the exception of the effect of the positive treatment on moderately shy subjects, the behavioral data also do not support the availability bias hypothesis.

In summary, at the cognitive level all subjects are resistant to the negative information about themselves and are to some extent responsive to positive information about themselves. Nevertheless, at the cognitive level of anlaysis there appears to be some support for a modified interpretation bias in that non-shy subjects are more responsive to positive information about themselves and more resistant to negative information about themselves than are shy subjects. An analysis at the affective level (i.e., feelings of shyness) supports the availability bias. The availability bias is further supported by the general responsiveness at the cognitive level to positive information about the self and is somewhat supported at the behavioral level by the improvement of moderately shy

subjects following the positive treatment. Similar improvement following the negative treatment may reflect subjects' ability to monitor whether cognitive or affective changes are displayed behaviorally. The above suggests the existence of both a modified interpretation bias and an availability bias. The cognitive level of analysis is most sensitive to the modified interpretation bias while the affective level of analysis is most sensitive to the availability bias.

D. Distinction Between Shyness and Its Expression

This experiment indicates that individuals who are not shy engage in less eye contact with the male confederate than do individuals who are moderately shy. In addition, individuals who are not shy engage in less smiling at the male confederate than either moderately or highly shy individuals. Therefore, to some extent, social interaction increases with shyness. Research to date provided no strong theoretical or empirical basis for expecting this finding. Indeed, shyness is typically defined in terms of impairment in social interactions. One possible explanation of this apparent inconsistency is that people probably do not avail themselves of all possible opportunities for social interaction. Instead it seems likely that social interaction (e.g., eye contact or smiling) only occurs when initiating factors reach threshold. Shy persons may attempt to compensate for their feelings of shyness by engaging in socially desirable activities associated with friendliness. Therefore, the threshold for engaging in social interaction may be lower for shy persons than for non-shy persons. However, extreme shyness may involve sufficient debilitation that the individual may be unable to engage in some activities (e.g., eye contact) despite any desire to compensate for the shyness. This explanation receives some support from the strong intercorrelations obtained between the measures of social interaction thereby suggesting similarity between the other measures of social interaction and both smiling and eye contact with the male confederate. In addition, friendliness, unlike all the other self and observer ratings, was unresponsive to the shyness variable. This suggests that people are able to hide the interpersonal effects of shyness. Because observed friendliness is not responsive to shyness, measures that are strongly associated with friendliness may be inadequate for evaluating the effect of a shyness treatment. Yet almost any measure of social interaction will be strongly associated with friendliness.

E. Adequacy of the Standard Dependent Measures of Shyness

Interpersonal measures such as smiling, talking, looking, and eye contact are standard indices used to evaluate shyness. Nevertheless, the lack of a relationship between friendliness and shyness as well as the other results from the present study suggest that interpersonal measures of shyness may be inadequate for an accurate evaluation of shyness. This inadequacy highlights the importance of developing an accurate conceptual definition of shyness. It is important to determine whether shyness is a behavioral problem or a private affective and/or cognitive event. If shyness is not a behavioral problem per se then behavioral measurements of shyness are at least one step removed from the primary processes of shyness. If behavioral manifestations are an expression of shyness but are also subject to other influences, then relying on behavioral measures as opposed to measures of cognitive or affective events will impede the study of shyness. It is important that future research identify and develop direct measures of shyness.

Judging treatment effectiveness by decreases in socially appropriate behavior

Regardless of the interpretation placed on the data, an analysis of both smiling and eye contact with the male confederate across levels of shyness clearly indicates that at least in some cases an increase in these behaviors is associated with increasing rather than decreasing shyness. Nevertheless, eye contact and smiling are both socially appropriate and somewhat desirable behaviors. It is obviously undesirable to be reliant on decreases in socially appropriate behaviors for evidence of treatment effectiveness.

In general, the measures of social interaction are not correlated with the measures of professional impairment. In addition, the number of arguments measure indicates that the desirable response is more strongly associated with the non-shy subjects than with the shy subjects. Also the measures of professional impairment are strongly intercorrelated. Together this suggests that an association between increasing dysfunction and increases in desirable behavior is not a problem for the professional measures.

Possible confounding of shyness with other social initiation factors

For measures of social interaction the positive relationship between desirable behavior and shyness is additionally complicated to the extent that social initiation factors other than shyness differ across the various levels of shyness or treatment. In measuring behavior such as smiling or eye contact, one is attempting to measure shyness. However, if not only shyness but also initiating factors such as a desire to compensate for feelings of shyness affect these social behaviors, then one can not be sure whether an alteration in the behavior occurred because of a change in shyness or a change in other initiating factors. This would not be a major problem if the behaviors were undesirable since any reduction in the behavior would then be beneficial, while any increase would be detrimental. However, in the present case the behavior is at least socially acceptable and may even be socially desirable; and therefore, there is no a priori desire to reduce the behavior. Instead, the value of measuring the behavior rests in the ability to infer increases or decreases in shyness from the behavior. To the extent that shyness is confounded with other social initiation factors; social behaviors such as eye contact and smiling are inadequate measures of shyness.

Sensitivity of the measures

The sensitivity of a measure can be determined by examining the measure's ability to discriminate among the various levels of shyness in the absence of treatment. Both the interpersonal measures and the professional measures lack sufficient sensitivity to evaluate treatment effectiveness across the entire range of shyness. The problem is most severe with respect to eye contact with the male confederate because this measure does not discriminate between extreme shyness and the absence of shyness. However, smiling at the male confederate and number of arguments are also problematic in that the measures do not discriminate between moderate and extreme shyness.

If potential treatments are to be adequately tested it is important to develop measures that are sensitive to the various levels of shyness so that improvement or impairment can be clearly identified. The development of measures that are responsive to small alterations in shyness is particularly important because, for practical reasons, laboratory evaluations of treatment potential often involve establishing the existence of a

small but reliable effect after an extremely short application of the potential therapy. If this reliable effect can be obtained with brief exposure to the treatment, then repeated exposure over time may produce large alterations that reach clinical significance as opposed to the statistically significant results that originally suggested the potential of the treatment.

F. Advantages of Including Three Levels of Shyness in the Experimental Design

The problems mentioned above would not have been apparent if only two levels of shyness had been included in the design. For example, the inclusion of all three levels made it apparent that a curvlinear relationship exists between eye contact and shyness. Had the design included only a high and a low shyness group, it would mistakenly have appeared that eye contact was not affected by shyness. Alternatively, if the design had included only highly shy subjects and subjects scoring near the mean on the shyness survey (i.e., moderately shy subjects), it would have mistakenly appeared that eye contact is reduced by increasing shyness. Not only would these conclusions have been incorrect, but they would have hidden the problems that arise because of the association between increases in shyness and increases in socially desirable behavior. The inclusion of three levels of shyness also made it apparent that neither the smiling measure nor number of arguments are sensitive to the distinction between moderately and severely impaired individuals while the eye contact measure is insensitive to the distinction between problem free individuals and severely impaired individuals. In short, the inclusion of three levels of shyness provided valuable new insights regarding shyness research.

G. Therapeutic Implications

The positive treatment appears promising as a treatment for shyness. Moderately shy subjects significantly improved after receiving this treatment. Highly shy subjects also improved after receiving this treatment, although the improvement was not significant. It is impressive that one 30-minute treatment was capable of altering a well-ingrained personal characteristic. This success suggests that multiple treatments over time may be even more effective. One would expect that ease in altering a personal characteristic is directly related to the strength of the characteristic, so that moderately shy individuals

should be more responsive to treatment than highly shy persons. The results of the present study are analogous to what occurs in drug research for physical dysfunctions. The same drug is often effective for both moderate and severe instances of a dysfunction; however, severe dysfunction usually requires larger dosages of the drug and/or longer periods of treatment. For example, a very mild dosage of a drug may be effective in treating moderate instances of a disorder but have only a very minor effect on more severe cases. This does not mean that the drug is ineffective. The drug is clearly useful for the moderate cases and the mild response of the severe cases suggests that the drug may also be effective for these cases if the dosage and/or length of treatment is increased. In designing this shyness treatment it was not anticipated that a 30-minute treatment would cure shyness or any other clinical dysfunction. Rather the present experiment was an initial investigation of whether people are responsive to the positive treatment. Moderately shy individuals clearly are responsive to the positive treatment and severely shy individuals are responding in the appropriate direction. This suggests that, if individuals received multiple exposures to the treatment, larger alterations in shyness might be obtained just as multiple exposures to a drug often result in continued improvement in physical dysfunctions. In addition, expanding the content area of the treatment to include more types of interpersonal events might further increase the treatment's effect especially if the expanded content is tailored to the individual's particular interpersonal concerns. This is the psychological equivalent of increasing the dosage. Because it seems unreasonable to assume that recalling past positive events could be harmful, there is no reason for therapists to avoid making immediate use of the positive treatment. Of course, further research on the positive treatment is still necessary in order to determine optimal expansions and applications of the treatment.

The effect of the negative treatment is not as straightforward as is the effect of the positive treatment. The results of some of the measures indicate that the negative treatment increased similarity between shy and non-shy persons (e.g., smiling at the male confederate). The results of other measures indicate that the negative treatment reduced the similarity between shy and non-shy individuals (e.g., self-ratings of shyness), while the results of still other measures indicate that the negative treatment had no effect on shy individuals (e.g., interpersonal thought listing). This conflicting picture for the negative

treatment is not restricted to the present study. Although there are many studies that indicate that negative feeling states result in negative self-ratings (e.g., Clark & Isen, 1982), the effect of negative feeling states on behavior is complex and not well understood. Some studies have demonstrated that negative feeling states increase antisocial behavior or reduce prosocial behavior (e.g., Baron & Bell, 1976; Underwood, Froming, & Moore, 1977), while other studies have shown that negative feeling states decrease antisocial behavior and increase prosocial behavior (e.g., Cialdini, Darby, & Vincent, 1973; Cialdini & Kenrick, 1976; Donnerstein, Donnerstein, & Munger, 1975). The complexity of the negative treatment as well as the possibility of negative repercussions from this treatment mitigate against any attempt toward implementation of the negative treatment in the therapeutic setting.

H. Conclusions

This experiment indicates that it is possible to manipulate the memorial availability of events. The experiment also indicates that the resultant memorial alteration was specific to the interpersonal events rather than a general alteration in the availability of positive or negative events. Finally the experiment demonstrates that alterations in memorial availability of positive events can provide an effective treatment especially at the moderate levels of impairment.

Footnotes

1. Winer (1971) argues that when it is important to avoid incorrectly rejecting the null hypothesis, it is appropriate to adhere to a degree of stringency represented by the standard .05 level of alpha. However, protection against incorrectly rejecting the null hypothesis is obtained at the expense of increasing the probability of failing to reject a false null hypothesis. Winer (1971) claims that when it is more important to protect against failure to reject a false null hypothesis, a less stringent alpha should be used and suggests that under these circumstances .30 and .20 levels of alpha are more appropriate than the standard .05 and .01 levels. He states that these less stringent levels are particularly important for evaluating exploratory work of practical significance. He also asserts that research can not always be conducted under the best circumstances for evaluating the hypotheses in question, and therefore, when this is the case, it is possible that the experiment will not provide an adequately sensitive (powerful) test of the hypotheses. Winer also states that it is appropriate to increase the alpha level when there is reason to suspect the sensitivity of the experiment. In part, the present research attempts to identify a potential treatment for shyness. To this end, subjects are given approximately a thirty minute exposure to the treatment. It is unrealistic to suppose that a clinical dysfunction, especially a severe dysfunction, can be cured by one treatment of thirty minutes. However, extended therapy is impractical for the initial testing of each potential treatment. Instead it is hoped that the thirty minute exposure will provide an indication of the treatment's potential. Those treatments that appear promising can then be tested under circumstances approximating therapeutic implementation of the treatment. As can be seen, the cost of rejecting a treatment with a real therapeutic potential is high. Conversely, during these initial stages of treatment development, there is a relatively small cost for falsely determining that a treatment may have potential and, therefore, determining to continue evaluating the treatment including evaluating the treatment under circumstances that more closely approximate the therapy environment.

   The measures obtained from the interaction with the male confederate were combined into a MANOVA. The measures obtained from the interaction with the

female confederate were also combined into a MANOVA, as were the interactions with the administrator. For each MANOVA the stringent .05 level of analysis was used in order to determine whether there was an effect. However, once an effect was identified, results falling within the .05 to .1 probability range are also highlighted in order to further explore the specific nature of the effect. Similarly, for those cases were an ANOVA was the first level of analysis, the stringent .05 criteria was applied to the ANOVA; but for subsequent analyses results within the .05 to .1 range are highlighted so as to maximize the exploration of effects obtained in the ANOVA.

Table 1

Multivariate Analysis of Variance

Based on Measures Obtained During the Interaction with the Male Confederate

Main Effects	Degrees of Freedom	F	p equal or less than
Shyness	8, 248	1.121	.349
Treatment	8, 248	1.083	.376
2-Way Interaction			
Shyness x Treatment	16, 504	1.883	.020

Univariate ANOVAs for Shyness x Treatment Interaction

Main Effects	Degrees of Freedom	F	p equal or less than
Talking to Male Confederate (Log Transformation)	4, 126	.612	.655
Looking at Male Confederate (Log Transformation)	4, 126	1.045	.387
Smiling at Male Confederate (Log Transformation)	4, 126	2.368	.056
Eye Contact with Male Confederate	4, 126	2.705	.033

Table 2

Mean Number of

Eye Contacts with the Male Confederate

as Functions of Shyness and Treatment

	Low Shyness	Moderate Shyness	High Shyness
Positive Treatment	4.73	4.27	4.33
Negative Treatment	4.20	4.27	5.73
No Treatment	4.67	6.20	4.67

For subjects who do not received a treatment, both the low shyness subjects and the high shyness subjects engaged in significantly less eye contact than did the moderately shy subjects, F's (1,126) = 4.35, p's = .039.

For moderate shyness subjects the amount of eye contact following both the positive treatment and the negative treatment was significantly less than the amount of eye contact following no treatment, F's (1,126) = 6.922, p's = .01.

Table 3

Mean Number of Seconds
Smiling at the Male Confederate
as Functions of Shyness and Treatment

	Low Shyness	Moderate Shyness	High Shyness
Positive Treatment	5.18	5.06	6.55
Negative Treatment	7.09	8.27	5.94
No Treatment	3.43	11.51	9.43

For subjects who do not received a treatment, both the moderate shyness subjects and the high shyness subjects engaged in significantly more smiling at the male confederate than did the low shyness subjects, F's (1,126) = 9.926 and 6.353 respectively p's = .002 and .013 respectively.

For moderate shyness subjects the amount of smiling at the male confederate following both the positive treatment and the negative treatment was significantly less than the amount of smiling at the male confederate following no treatment, F's (1,126) = 6.005 and 6.353 respectively; p's = .016 and .013 respectively.

Table 4

Multivariate Analysis of Variance

Based on Measures Obtained During the Interaction with the Female Confederate

Main Effects	Degrees of Freedom	F	p equal or less than
Shyness	8, 248	.781	.620
Treatment	8, 248	1.093	.369
2-Way Interaction			
Shyness x Treatment	16, 504	1.220	.248

Table 5

Intercorrelations Amoung the Dependent Measures
One Tailed Tests -- N = 135

		Talking to Male	Eye Contact with Male	Looking at Male	Smiling at Male	Talking to Female	Eye Contact with Female	Looking at Female	Smiling at Female	Job Pref	Time Arguing	Number of Argue-ments
Talking to Male	r		.279	.371	.248	.319	.176	.187	.066	.032	.060	.030
	p		.001	.000	.004	.000	.041	.030	.449	.711	.493	.731
Eye Contact with Male	r			.458	.239	.299	.178	.276	.244	.077	.224	-.004
	p			.000	.005	.000	.039	.001	.004	.374	.009	.962
Looking at Male	r				.482	.266	.299	.671	.312	.051	.087	-.037
	p				.000	.002	.000	.000	.000	.559	.317	.673
Smiling at Male	r					.108	.180	.283	.529	.195	-.094	-.241
	p					.214	.036	.001	.000	.024	.278	.005
Talking with Female	r						.210	.331	.227	-.069	.037	.029
	p						.014	.000	.008	.430	.672	.740
Eye Contact with Female	r							.540	.298	.189	-.130	-.057
	p							.000	.000	.028	.133	.513
Looking at Female	r								.323	.094	-.053	.019
	p								.000	.276	.540	.823
Smiling at Female	r									.088	.049	-.111
	p									.311	.569	.199
Job Pref	r										-.177	-.218
	p										.040	.011
Time Arguing	r											.684
	p											.000

Table 6

Multivariate Analysis of Variance

Based on Self and Observer Ratings of Subject

Main Effects	Degrees of Freedom	F	p equal or less than
Shyness	24, 228	11.737	.001
Treatment	24, 228	.878	.633
2-Way Interaction			
Shyness x Treatment	48, 454	1.016	.448

Univariate ANOVAs for Shyness Main Effect

Main Effects	Degrees of Freedom	F	p equal or less than
Shyness Survey	2, 126	134.631	.001
Self-Esteem Survey	2, 126	55.573	.001
Fear of Rejection	2, 126	38.365	.001
Happiness	2, 126	9.264	.001
Positiveness	2, 126	8.858	.001
Cheerfulness	2, 126	9.029	.001
Calmness	2, 126	5.918	.003
Edation/Depression	2, 126	6.117	.003
Feeling Good/Bad	2, 126	8.480	.001
Combined Observer Ratings of Shyness	2, 126	3.653	.029
Combined Observer Ratings of Assertiveness	2, 126	7.273	.001
Combined Observer Ratings of Friendliness	2, 126	1.452	.238

Table 7

Means for Shyness Main Effects

From Observer and Self-Ratings Analyses

	Low Shyness	Moderate Shyness	High Shyness
Shyness Survey**	12.58	23.58	36.78
Self-Esteem Survey**	30.71	26.58	23.16
Fear of Rejection**	1.53	2.71	4.16
Happpiness*	2.84	3.29	3.93
Positiveness*	2.93	3.29	4.11
Cheerfulness*	2.84	3.09	3.84
Calmness*	2.67	3.24	3.78
Elation/Depression*	3.20	3.49	4.00
Feeling Good/Bad*	2.36	2.84	3.38
Combined Observer Ratings of Subject's Shyness**	8.91	10.53	11.04
Combined Observer Ratings of Subject's Assertiveness**	14.36	12.76	11.69

*Note: Increasing scores indicate decreasing happiness, positiveness, cheerfulness, calmness, elation, or feeling good.

**Note: Increasing scores indicate increasing self-ratings of shyness, self-esteem, or fear of rejection as well as observer ratings of shyness or assertiveness.

Table 8

Analysis of Variance on

Pre-Post-Treatment Change in Shyness Survey Scores

Source of Variation	Degrees of Freedom	Mean Sq.	F	p equal or less than
Main Effects	4	300.874	7.973	.001
Shyness	2	414.141	10.975	.001
Treatment	2	187.607	4.972	.008
2-Way Interaction	4	11.785	.312	.869
Shyness x Treatment	4	11.785	.312	.869
Explained	8	156.330	4.143	.001
Residual	126	37.735		
Total	134	44.815		

Pre-Post-Treatment Means for Shyness Main Effect

High Shyness	Moderate Shyness	Low Shyness
-3.69	-0.73	2.38

Pre-Post-Treatment Means for Treatment Main Effect

Positive	Negative	None
-1.09	1.53	-2.49

Note: Negative numbers indicate subjects became less shy.

Table 9

Multivariate Analysis of Variance

Based on Measures Obtained During the Interaction with the Administrator
(Logarithmically Transformed)

Main Effects	Degrees of Freedom	F	p equal or less than
Shyness	4, 252	1.625	.169
Treatment	4, 252	.889	.471
2-Way Interaction			
Shyness x Treatment	8, 252	2.009	.046

Univariate ANOVAs for Shyness x Treatment Interaction

Main Effects	Degrees of Freedom	F	p equal or less than
Number of Arguments (Log Transformation)	4, 126	2.080	.087
Time Spent Arguing (Log Transformation)	4, 126	1.303	.273

Table 10

Shyness x Treatment Interaction

Mean Number of Arguments with the Administrator for Credit

As Functions of Shyness and Treatment

	Low Shyness	Moderate Shyness	High Shyness
Positive Treatment	5.40	5.60	4.60
Negative Treatment	4.67	5.73	4.53
No Treatment	6.47	4.20	4.20

For subjects who do not received a treatment, both the moderate shyness subjects and the high shyness subjects engaged in fewer arguments for credit than did the low shyness subjects, F's (1,126) = 6.667 and 3.267 respectively p's = .011 and 073 respectively.

For moderate shyness subjects there was a greater number of arguments for credit following both the positive treatment and the negative treatments than following no treatment, F's (1,126) = 3.75 and 4.267 respectively p's = .055 and .041 respectively.

Low shyness and high shyness subjects who received the negative treatment made somewhat fewer arguments for credit than low shyness subjects who received no treatment (i.e., the non-debilitated, non-treated comparison group), F's (1,126) = 3.267 and 2,817 respectively; p's = .073 and .096 respectively.

Table 11

Mean Number of Items Recalled During Treatment

Means for Treatment Main Effect

Positive	Negative
100.11	60.71

Means for Shyness x Treatment Interaction

	Low Shyness	Moderate Shyness	High Shyness
Positive Treatment	131.33	89.33	79.67
Negative Treatment	50.27	72.00	59.87

For low shyness subjects there was a greater number of items recalled during the positive treatment than during the negative treatment, F (1,126) = 35.195, $p < .001$.

Low shyness subjects who received the positive treatment recalled more items than did either moderate or high shyness subjects who recieved the positive treatment, F's (1,126) = 9.449 and 14.295 respectively p's < .003 and .001 respectively.

Table 12

Post-Treatment Thought Listing Analysis

Interpersonal Thoughts

Means for Thought Valence Main Effect

Positive	Negative	Neutral
.711	.741	.474

Note: There was a smaller number of neutrally valenced thoughts than either positively or negatively valenced thoughts, F's (1, 252) = 5.693 and 7.225 respectively, p's = .018 and .008 respectively.

Table 13

Post-Treatment Thought Listing Analysis

Interpersonal Thoughts

Means for Thought Valence x Treatment Interaction

	Positive Thoughts	Negative Thoughts	Neutral Thoughts
Positive Treatment	1.067	.644	.467
Negative Treatment	.533	.689	.578
No Treatment	.533	.889	.378

Subjects who received the positive treatment engaged in a greater number of positively valenced thoughts than did subjects who received the negative treatment or no treatment, *F*'s (1,252) = 9.634, *p*'s = .002

Table 14

Post-Treatment Thought Listing Analsysis

Interpersonal Thoughts

Means for Thought Valence x Treatment x Shyness Interaction

High Shyness Condition

	Positive Thoughts	Negative Thoughts	Neutral Thoughts
Positive Treatment	.933	.667	.600
Negative Treatment	.400	.800	.333
No Treatment	.400	1.000	.333

Subjects who received the positive treatment engaged in a greater number of positively valenced thoughts than either negatively or neutrally valenced thoughts, F's (1,252) = 3.199, p's = .075.

Subjects who did not receive a treatment engaged in a greater number of negatively valenced thoughts than either positively or neutrally valenced thoughts, F's (1,252) = 4.054 and 5.010 respectively, p's = .045 and .026 respectively.

Moderate Shyness Condition

	Positive Thoughts	Negative Thoughts	Neutral Thoughts
Positive Treatment	.933	.333	.733
Negative Treatment	.867	.867	.467
No Treatment	.600	.667	.467

Subjects who received the positive treatment engaged in a greater number of positively valenced thoughts than negatively valenced thoughts, F (1,252) = 4.054, p = .045. Subjects who received the positive treatment also engaged in a fewer number of negatively valenced thoughts than did subjects who received the negative treatment F (1,252) = 3.211, p = .074.

Low Shyness Condition

	Positive Thoughts	Negative Thoughts	Neutral Thoughts
Positive Treatment	1.333	.933	.067
Negative Treatment	.333	.400	.933
No Treatment	.600	1.000	.333

Subjects who received the positive treatment engaged in a greater number of positively valenced thoughts than did subjects who received the negative treatment or no treatment, *F*'s (1,252) = 11.261, 6.051 respectively, *p*'s = .001 and .015 respectively.

Subjects who received the negative treatment engaged in a lower number of negatively valenced thoughts than did subjects who received either the positive treatment or no treatment, *F*'s (1,252) = 3.199 & 4.054 respectively, *p*'s = .075 and .045 respectively. Subjects who received the negative treatment also engaged in a lower number of both negatively valenced thoughts and positively valenced thoughts than neutrally valenced thoughts, *F*'s (1,252) = 3.199 & 4.054 respectively, *p* = .045 and .075 respectively. while subjects who received no treatment engaged in a greater number of negatively valenced thoughts than neutrally valenced thoughts, *F* (1,252) = 5.010, *p* = .026.

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Appendix A

Questionnaire Used in Pretesting.

Please Use the following scale to answer questions 1–10.

0	1	2	3	4	5	6
Not at All True of Me			Moderately True of Me			Extremely True of Me

1. I am socially somewhat awkward.
2. I don't find it hard to talk to strangers.
3. I feel tense when I'm with people I don't know well.
4. When conversing I worry about saying something dumb.
5. I feel nervous when speaking to someone in authority.
6. I am often uncomfortable at parties and other social functions.
7. I feel inhibited in social situations.
8. I have trouble looking someone right in the eye.
9. I am more shy with members of the opposite sex.
10. I am afraid of rejection by others.

Please use the following scale to answer questions 11–15.

0	1	2	3
Strongly Agree	Agree	Disagree	Strongly Disagree

11. I feel that I'm a person of worth, at least on an equal basis with others.

12. I feel I do not have much to be proud of.
13. All in all, I am inclined to feel that I am a failure.
14. On the whole, I am satisfied with myself.
15. I certainly feel useless at times.

Appendix B

Negative Treatment

This experiment examines whether people who are better at recalling events from their past are also better at other types of memory tasks. We will be asking you to recall various types of experience. The experimenter has given you several sheets, which list each type of experience in the same order as the experiences will be presented on this tape recording. Do not read the various experiences now. Wait and read the experiences while the tape recording states the experience. After the tape recording tells you the type of experience that you are to recall, try to remember as many times as possible when you have had this type of experience. For each event, which you remember, think of a word or two that will remind you of the event later. Write these words in the appropriate space on your sheets. For each type of experience, you will be given 1-1/2 minutes to recall as many events as possible.

A. I made a bad impression or displayed some bad qualities.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

B. I made a fool of myself.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

C. Either my parents or my friends seemed to be ashamed of me.

1. _____ 7. _____
2. _____ 8. _____
3. _____ 9. _____
4. _____ 10. _____
5. _____ 11. _____
6. _____ 12. _____

D. People were unfriendly (did not like) me.

1. _____ 7. _____
2. _____ 8. _____
3. _____ 9. _____
4. _____ 10. _____
5. _____ 11. _____
6. _____ 12. _____

E. I felt like people wished I wasn't there.

1. _____ 7. _____
2. _____ 8. _____
3. _____ 9. _____
4. _____ 10. _____
5. _____ 11. _____
6. _____ 12. _____

F. I either felt insecure or felt ill at ease and awkward in the presence of others.

1. _____ 7. _____
2. _____ 8. _____
3. _____ 9. _____
4. _____ 10. _____
5. _____ 11. _____
6. _____ 12. _____

G. I ruined a friendship (or relationship).

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

H. Either something was ruined or I made a mess of things because I didn't take care of business.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

I. When someone got to know me, they didn't like me.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

J. I either performed poorly or was sharply and accurately criticized (e.g., in school, in social setting, at home).

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

K. I was left out of something.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

L. Someone either thought I was boring or I had the impression that I was getting on their nerves.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

M. I said the wrong thing.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

N. Someone I felt positively toward either did not like me or rejected me.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

O. I either thought that my appearance was unattractive to others or that my clothing was inappropriate.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

P. I couldn't think of anything to say.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

Q. I felt withdrawn into myself and not really part of the social interaction.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

R. I did not know what was expected in the situation (e.g., did not know the social norms).

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

S. I was humiliated (e.g., told I was immature) in front of others.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

T. Either my thinking or my judgment was muddy or I either had trouble making decisions or communicating my ideas to others.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

U. Someone made fun of me.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

Appendix C

Positive Treatment

This experiment examines whether people who are better at recalling events from their past are also better at other types of memory tasks. We will be asking you to recall various types of experience. The experimenter has given you several sheets, which list each type of experience in the same order as the experiences will be presented on this tape recording. Do not read the various experiences now. Wait and read the experiences while the tape recording states the experience. After the tape recording tells you the type of experience that you are to recall, try to remember as many times as possible when you have had this type of experience. For each event, which you remember, think of a word or two that will remind you of the event later. Write these words in the appropriate space on your sheets. For each type of experience, you will be given 1-1/2 minutes to recall as many events as possible.

A. I made a good impression or displayed some good qualities.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

B. I was the most knowledgeable person in the group.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

C. Either my parents or my friends seemed to be proud of me.

1. _____ 7. _____
2. _____ 8. _____
3. _____ 9. _____
4. _____ 10. _____
5. _____ 11. _____
6. _____ 12. _____

D. People were friendly (liked) me.

1. _____ 7. _____
2. _____ 8. _____
3. _____ 9. _____
4. _____ 10. _____
5. _____ 11. _____
6. _____ 12. _____

E. I felt like people were glad (pleased) that I was there.

1. _____ 7. _____
2. _____ 8. _____
3. _____ 9. _____
4. _____ 10. _____
5. _____ 11. _____
6. _____ 12. _____

F. I either felt comfortable or relaxed and at ease in the presence of others.

1. _____ 7. _____
2. _____ 8. _____
3. _____ 9. _____
4. _____ 10. _____
5. _____ 11. _____
6. _____ 12. _____

G. I formed a good friendship (or relationship).

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

H. Either something was fixed or I did a particularly good job because I took care of business.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

I. When someone got to know me, they liked me.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

J. I either performed well or was warmly and accurately praised (e.g., in school, in social setting, at home).

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

K. Someone eagerly included me in something.

1. _____ 7. _____
2. _____ 8. _____
3. _____ 9. _____
4. _____ 10. _____
5. _____ 11. _____
6. _____ 12. _____

L. Someone either thought I was interesting or I had the impression that they enjoyed my company.

1. _____ 7. _____
2. _____ 8. _____
3. _____ 9. _____
4. _____ 10. _____
5. _____ 11. _____
6. _____ 12. _____

M. I said just the right thing.

1. _____ 7. _____
2. _____ 8. _____
3. _____ 9. _____
4. _____ 10. _____
5. _____ 11. _____
6. _____ 12. _____

N. Someone I felt positively toward either liked me or found me desirable.

1. _____ 7. _____
2. _____ 8. _____
3. _____ 9. _____
4. _____ 10. _____
5. _____ 11. _____
6. _____ 12. _____

O. I either thought that my appearance was attractive to others or that my clothing was particularly appropriate.

1._____ 7._____
2._____ 8._____
3._____ 9._____
4._____ 10._____
5._____ 11._____
6._____ 12._____

P. I either brought up interesting things to discuss or made some good points about things in a discussion.

1._____ 7._____
2._____ 8._____
3._____ 9._____
4._____ 10._____
5._____ 11._____
6._____ 12._____

Q. I felt outgoing and felt like I was really an important part of a social interaction.

1._____ 7._____
2._____ 8._____
3._____ 9._____
4._____ 10._____
5._____ 11._____
6._____ 12._____

R. Because I was sensitive to social expectations, people thought I handled myself well.

1._____ 7._____
2._____ 8._____
3._____ 9._____
4._____ 10._____
5._____ 11._____
6._____ 12._____

S. I was complimented (e.g., told I was very mature) in front of others.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

T. Either my thinking or my judgment was clear or I either was able to make good decisions or clearly communicate my ideas to others.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

U. Someone either wanted to be like me or copied me in some way.

1._____ 7._____

2._____ 8._____

3._____ 9._____

4._____ 10._____

5._____ 11._____

6._____ 12._____

Appendix D

Rosenthal Self-Esteem Inventory

Please use the following scale to answer questions 11-20.

0	1	2	3
Strongly Agree	Agree	Disagree	Strongly Disagree

11. I feel that I'm a person of worth, at least on an equal basis with others.
12. I feel that I have a number of good qualities.
13. All in all, I am inclined to feel that I am a failure.
14. I am able to do things as well as most other people.
15. I feel I do not have much to be proud of.
16. I take a positive attitude toward myself.
17. On the whole, I am satisfied with myself.
18. I wish I could have more respect for myself.
19. I certainly feel useless at times.
20. At times I think I am no good at all.